### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE PATENT EXAMINING OPERATION

ATTN'Y DOCKET NO.: ETS-TCA

'APPLICATION OF: PETER BRITTINGHAM, MARY E. MORLEY, MARK K.

SINGLEY, MARK G. ZELMAN, KRISHNA N. JHA, JAMES H. FIFE, ROBERT L. RARICH, IRVIN R.

KATZ, RANDY E. BENNETT

FOR: COMPUTER-BASED TEST-ITEM GENERATION AND

CLONING

#### DRAWINGS

(FIGS. 1-73, 73A-73E, 74-79, 80A-80C, 81, 82A-82C, 83-97, 98A-98B, 99-105, 106A-106B, 107)

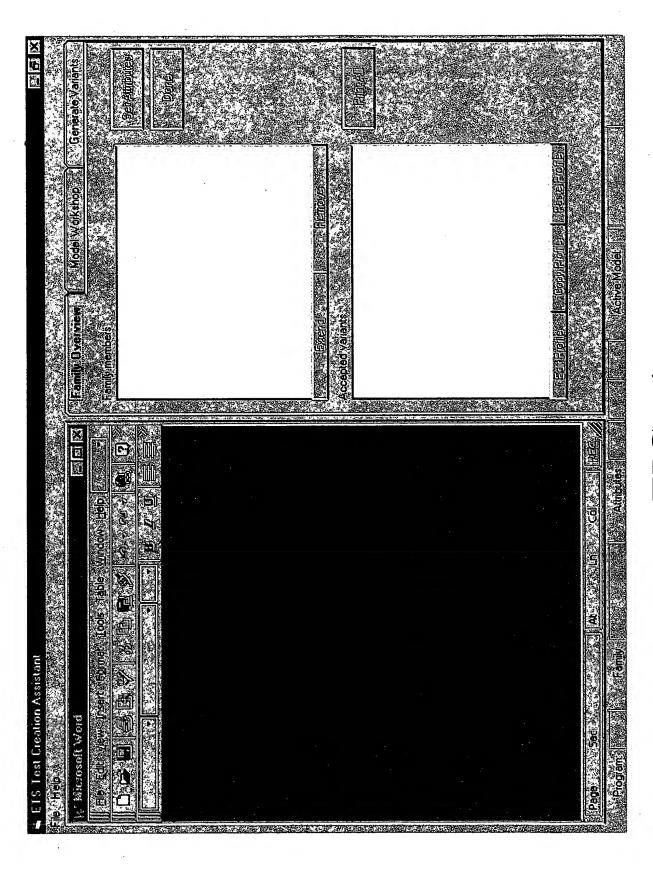


FIG. 1

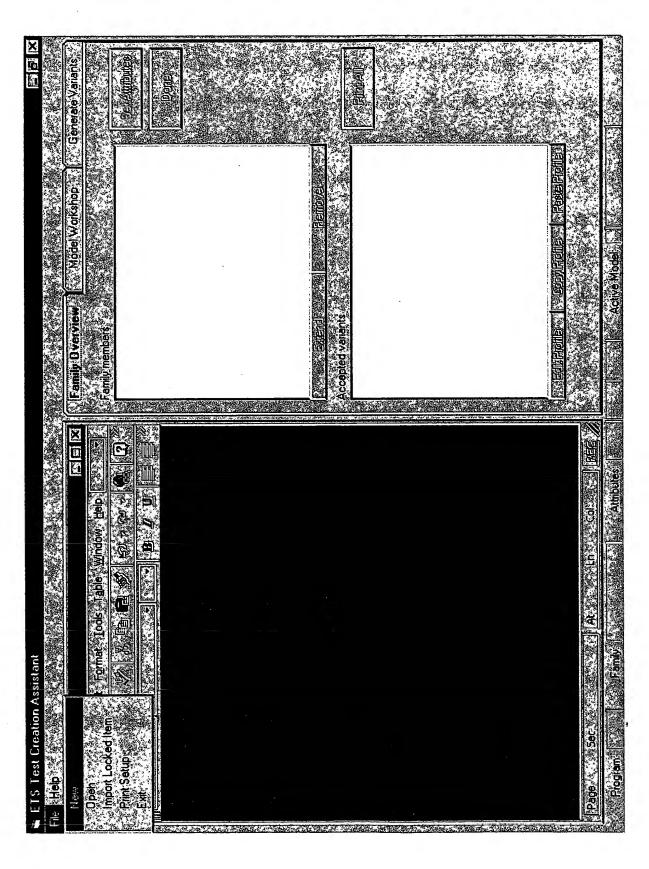


FIG. 2

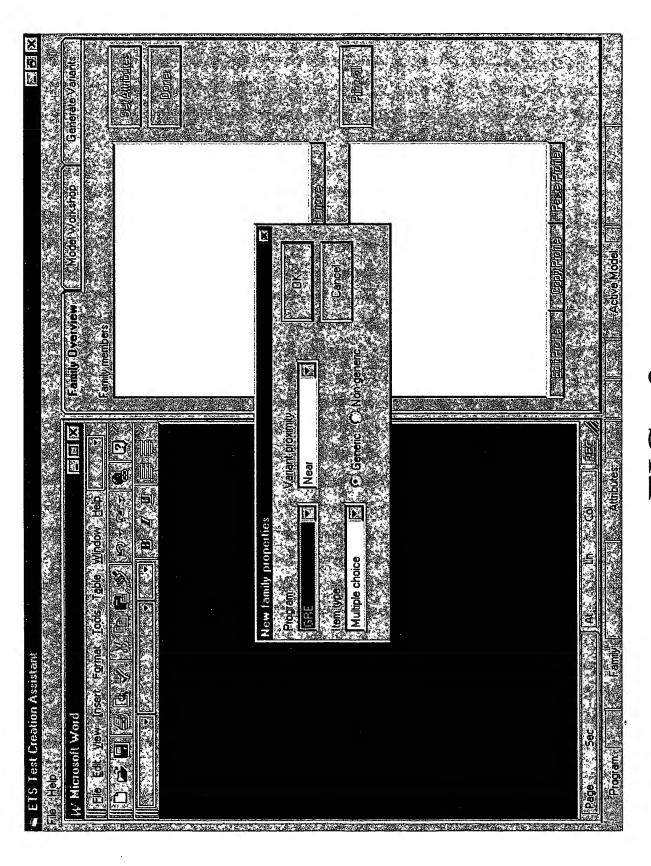


FIG. 3

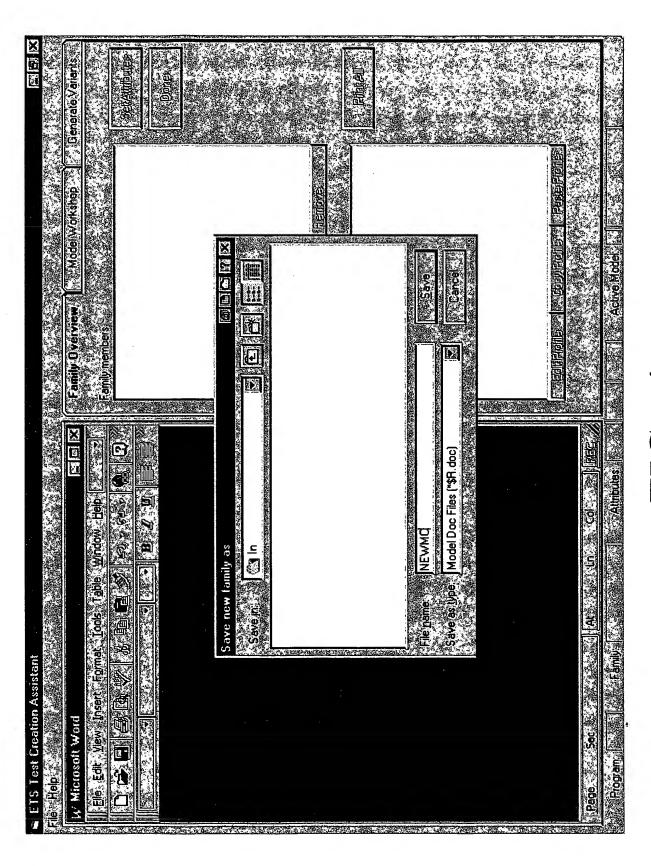


FIG. 4

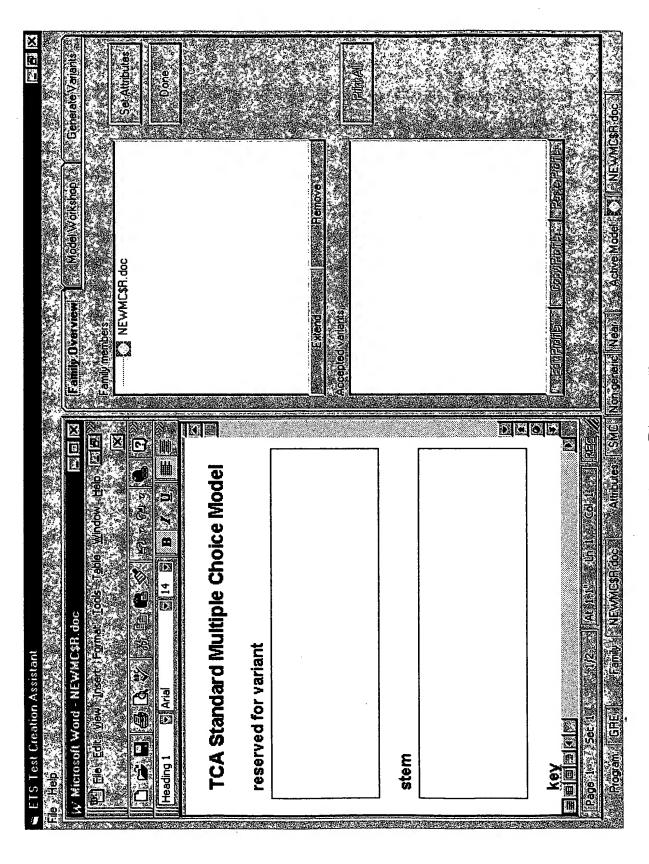


FIG. 5

Distractor8

scratch pad

#### **TCA Standard Multiple Choice Model** reserved for variant stem key Key distractor1 Distractor1 distractor2 Distractor2 distractor3 Distractor3 distractor4 Distractor4 distractor5 Distractor5 distractor6 Distractor6 distractor7 Distractor7

### Scratch Pad Area

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► ETS Test Creation Assistant File: Yelb	soft Word - NEWMC\$FL.d	See Edic Yew Insert Formation		Body Text Times New Roman	TCA Standard Multip	reserved for variant	stem	If John has 5 apples and Mary has 6 apples, how many apples do they have together?	Kex	Key	distractor1	Distractor1	distractor2 画画画画画画画画	

FIG. 7

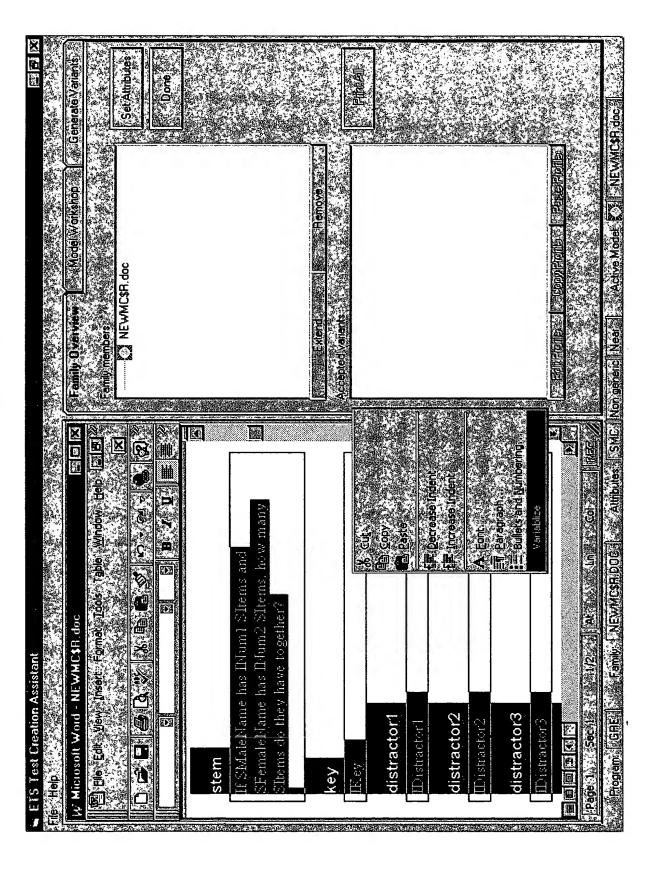
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ः ETS Test Creation Assistant File Help	K Wicrosoft Word - NEWMC\$R.doc			Body Text   🖫 Times New Roman 🔊 12 🕝 🖪 🗸 🗘   匡 臺 🥟	TCA Standard Multiple Choice Model	reserved for variant	stem	If SMaleName has 5 SItems and SFemaleName has 6 SItems, how many SItems do they have together?	XeX	Key	distractor1	Distractor1	distractor2 国间间归间图		Family K

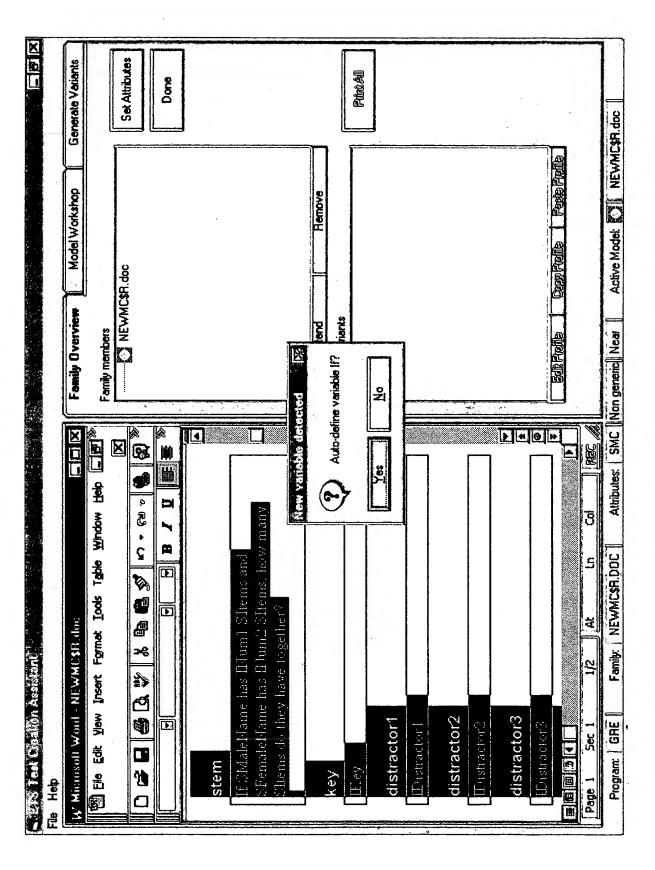
FIG. 8

	R. doc				Extend:	Accepted variants									
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FIG. 9



# FIG. 10



# FIG. 11

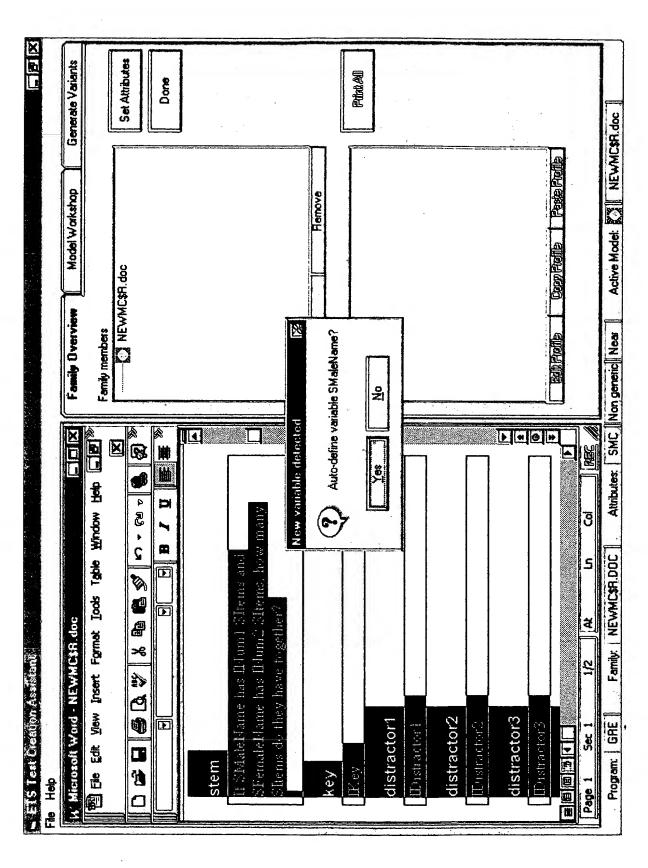


FIG. 12

Eamin Oversian Madda Wash aleas Assessed	TOTAL WORKINGS	SMaleName(C, 1,4); String, in []  Save Model Slams(C, 1,4); String, in []	(2) SFemaleName(C, 1,4): String, in []  [4] Num2(C): Int	onstraint. Then right bu	Variation Constraints	Print Constraints	Comments		Add   Edit   Remove   Test	Distractor Constraints				Add   Edit   Remove   Test		SMC Non cenerical Near Active Model: P. NEVMCSB doc
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FIG. 13

	Family Overview Model Workshop Generate Variants	Variables	✓ SMaleWarmel I 191 Add Save Model	Sltems(C, 1, F): String, Remove  SFemaleName(C, 1, F): Deat All	A(C): Int Enable All scotor1(C): Int Disable All	Variation Constraints	Print	Comments		Add   Edill   Remove   Test	Distractor Constraints				Add   Edft   Bernave   Took		an generic Near Active Model: [ ] NEWMC\$R.doc
= E15 Test Creation Assistant File Help	W. Hierasoft Word - NEWMC\$R.doc	The Edit Yiew Insert Format Iools Table Window Help			stem	If SMaleName has INum! SItems and SFemaleName has INum? SItems, how many	Silems do they have together?	Key	IK. C.	distractor1	Distractor1	distractor2	Distractor2	distractor3	Distractor3		am: GRE Family: NEWMC\$R.DOC Attributes:

FIG. 14

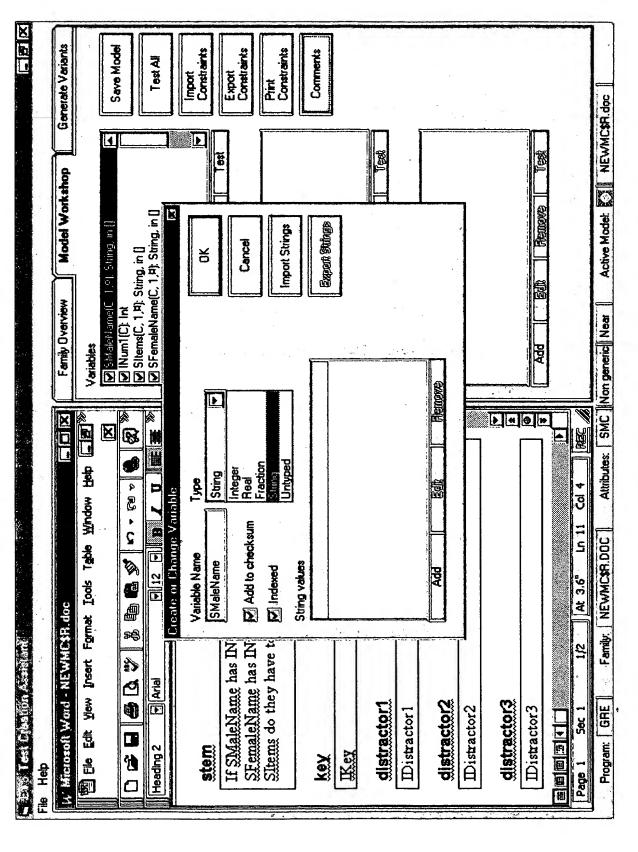


FIG. 15

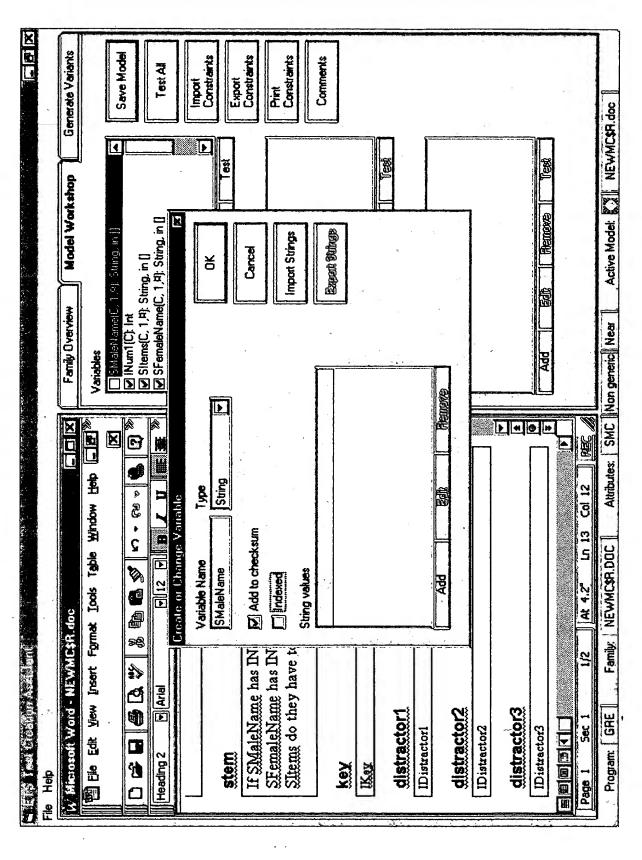


FIG. 16

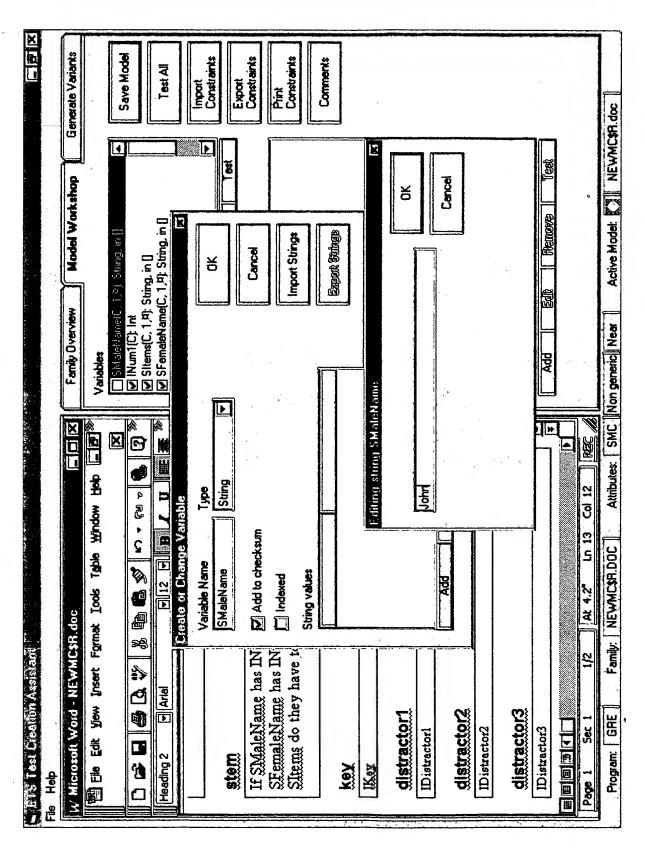


FIG. 17

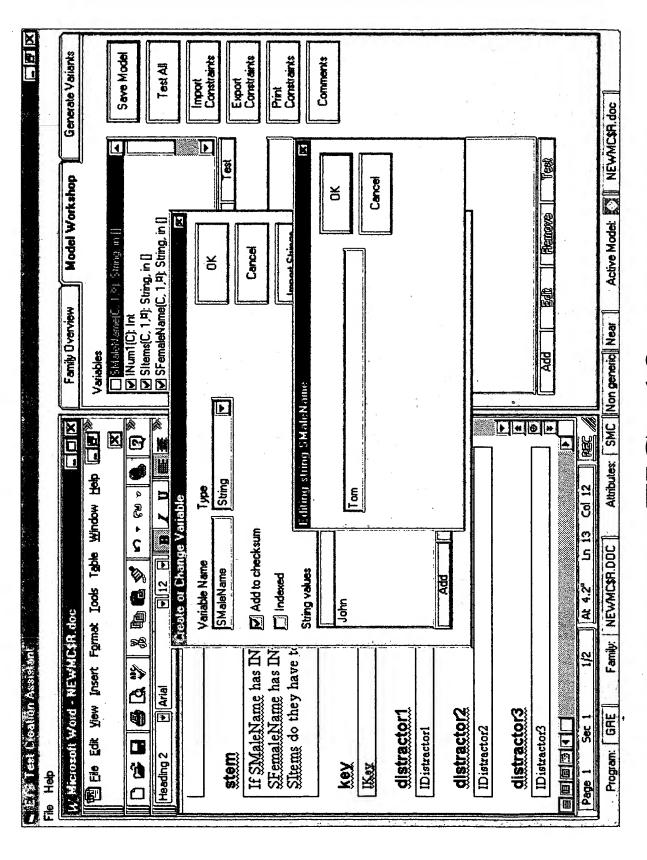


FIG. 18

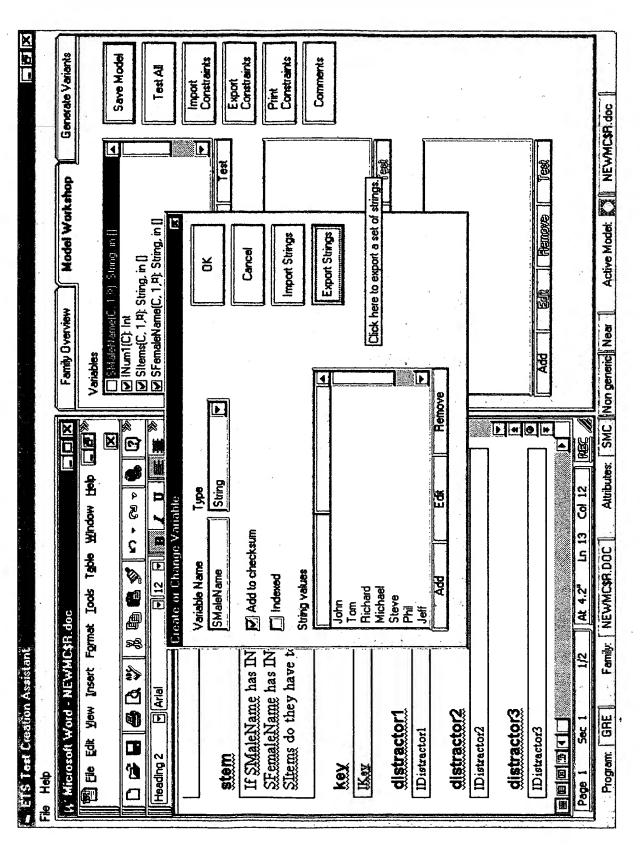


FIG. 19

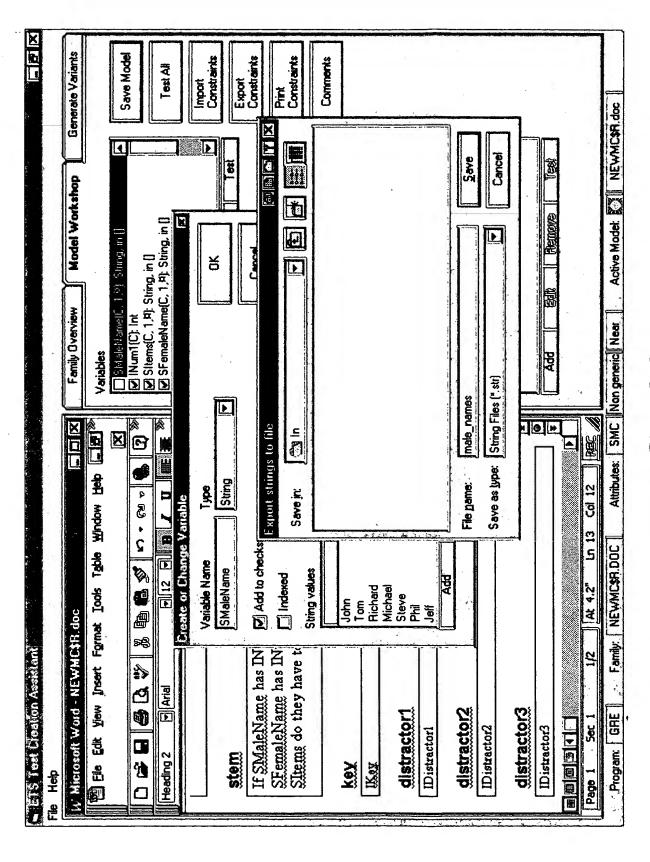


FIG. 20

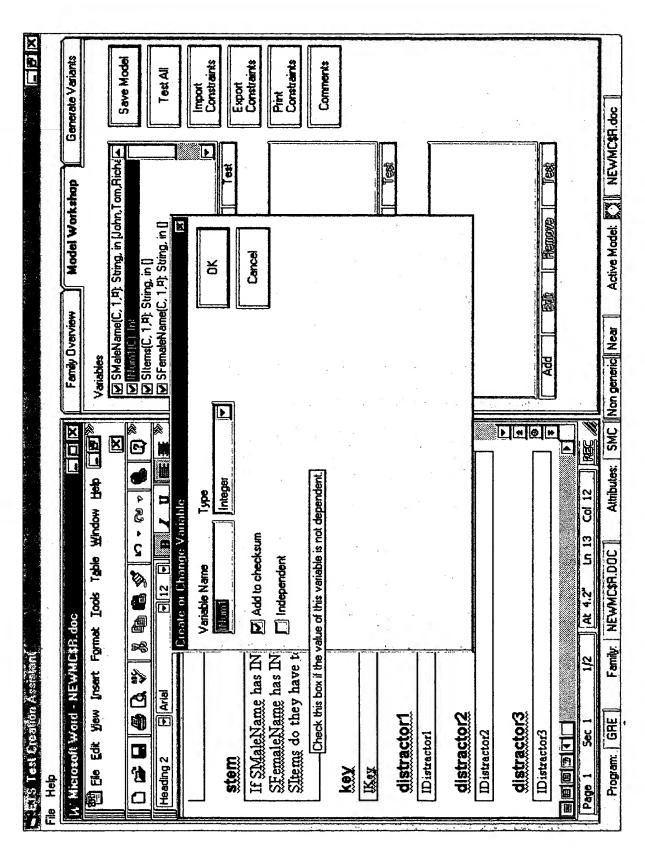


FIG. 21

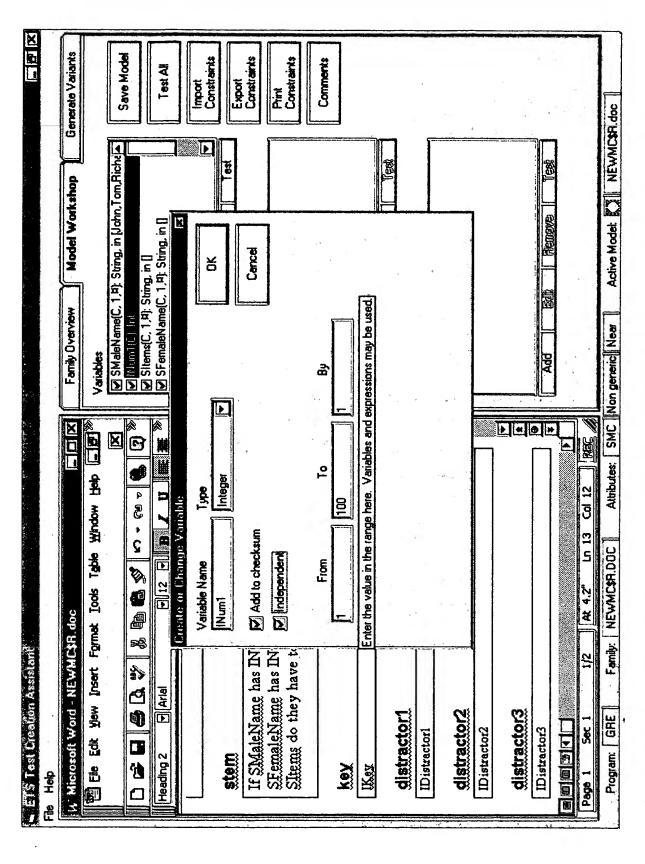


FIG. 22

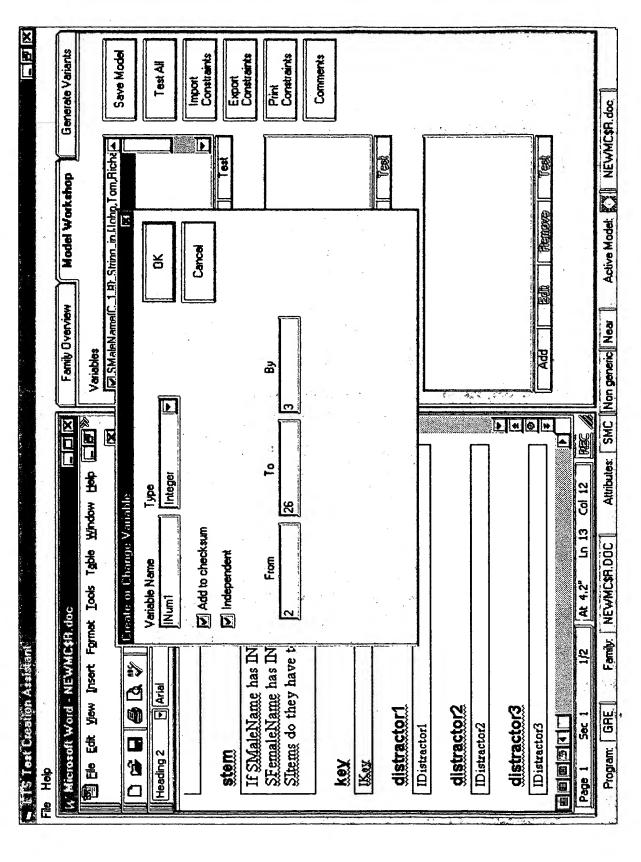


FIG. 23

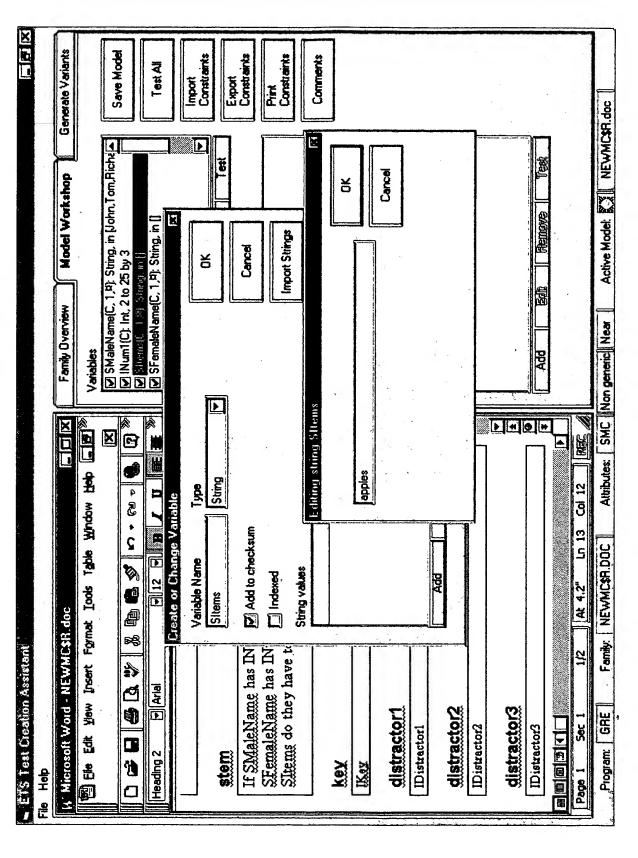


FIG. 24

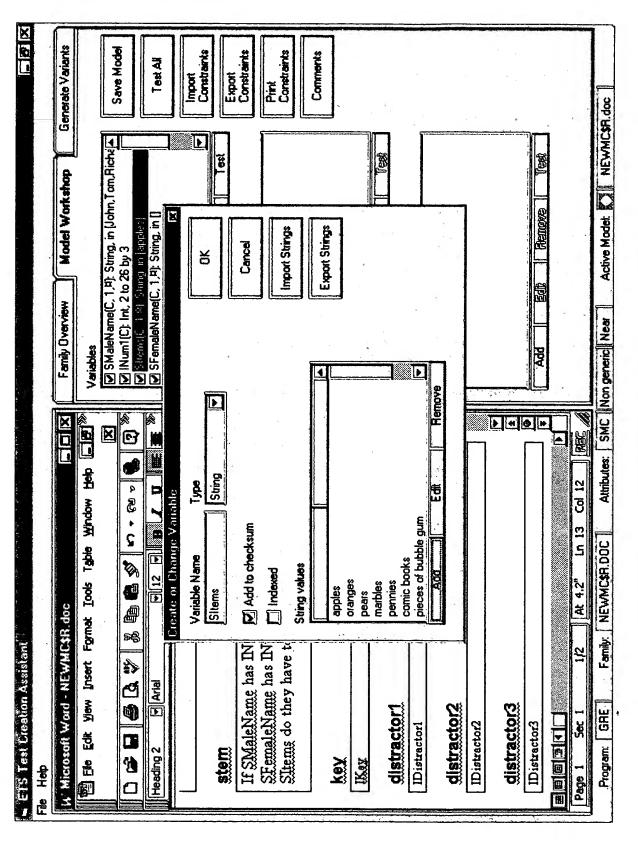


FIG. 25

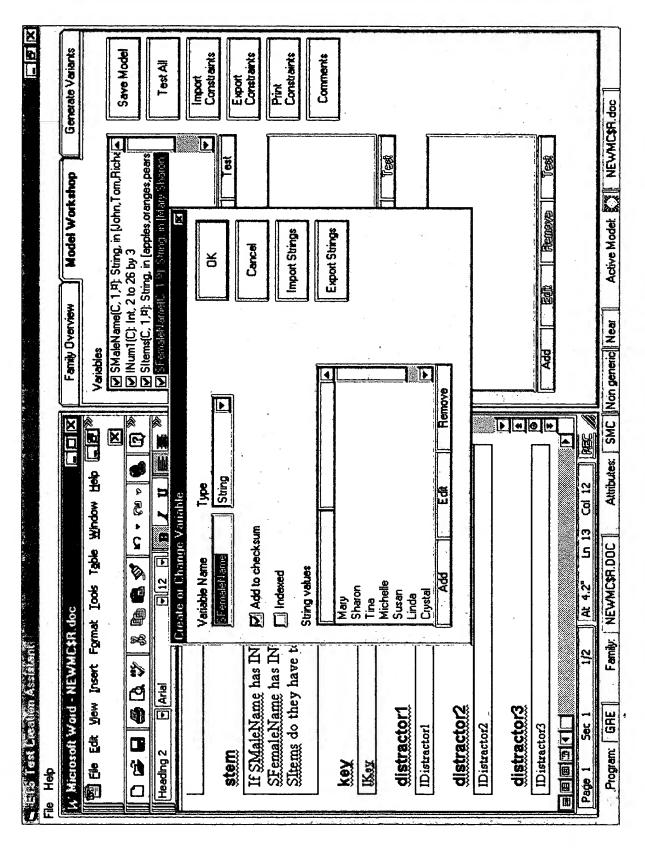


FIG. 26

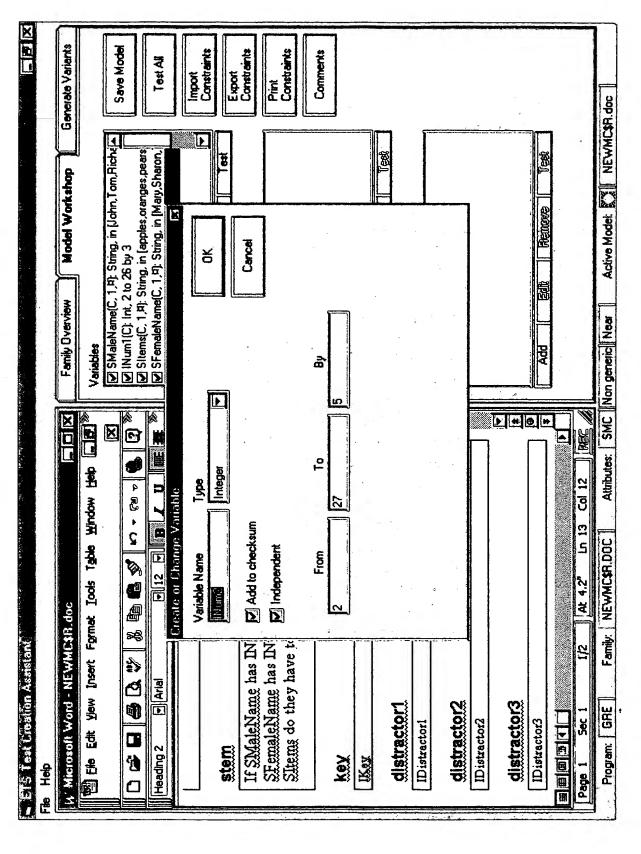


FIG. 27

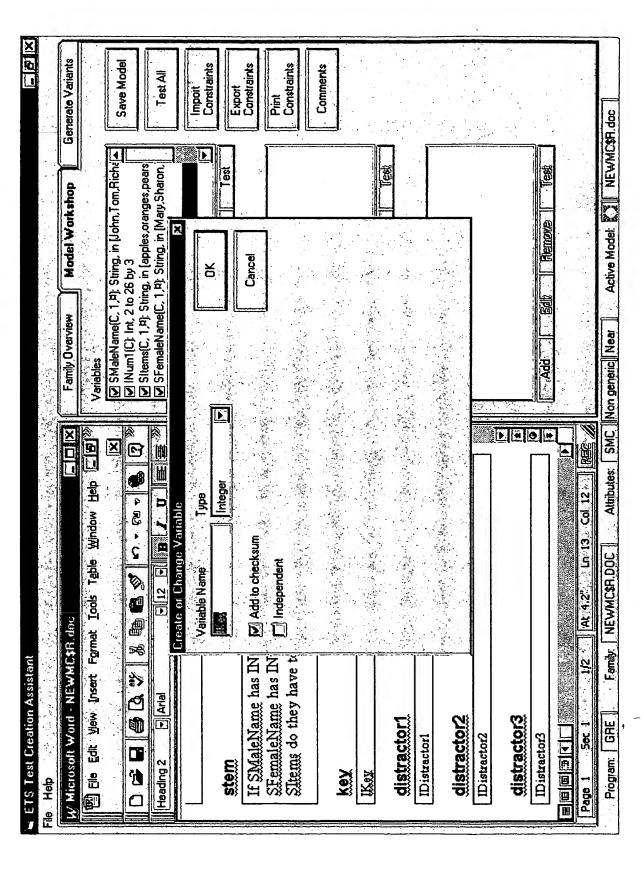


FIG. 28

S

FIG. 29

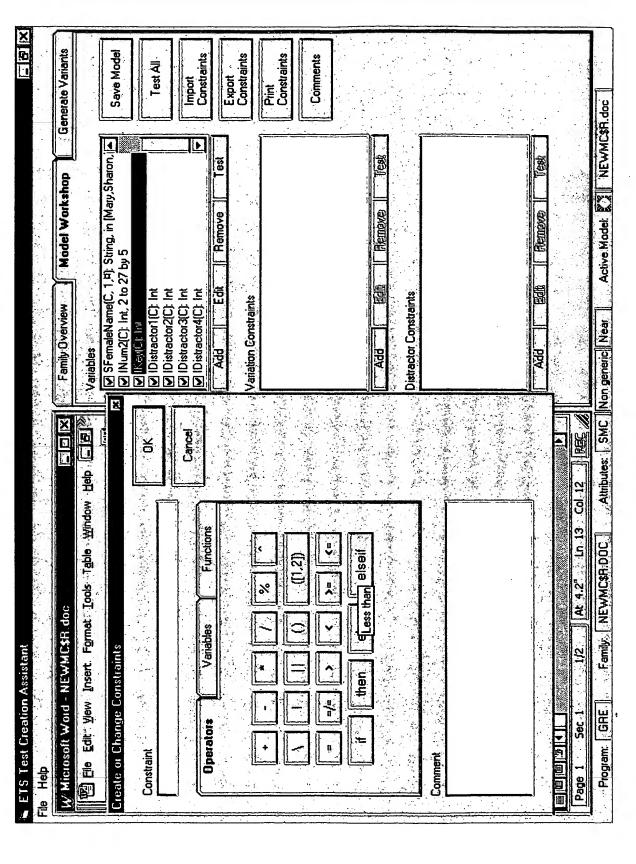


FIG. 30

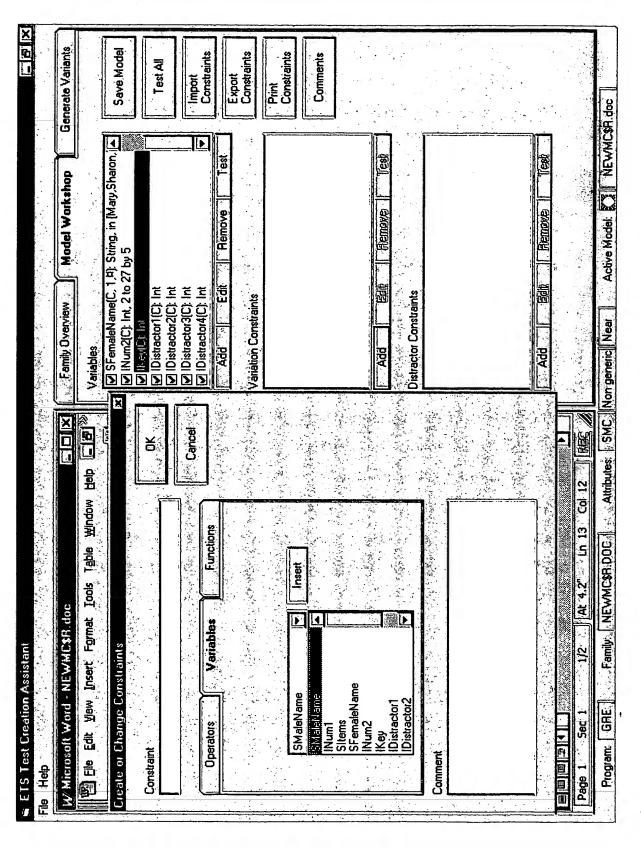


FIG. 31

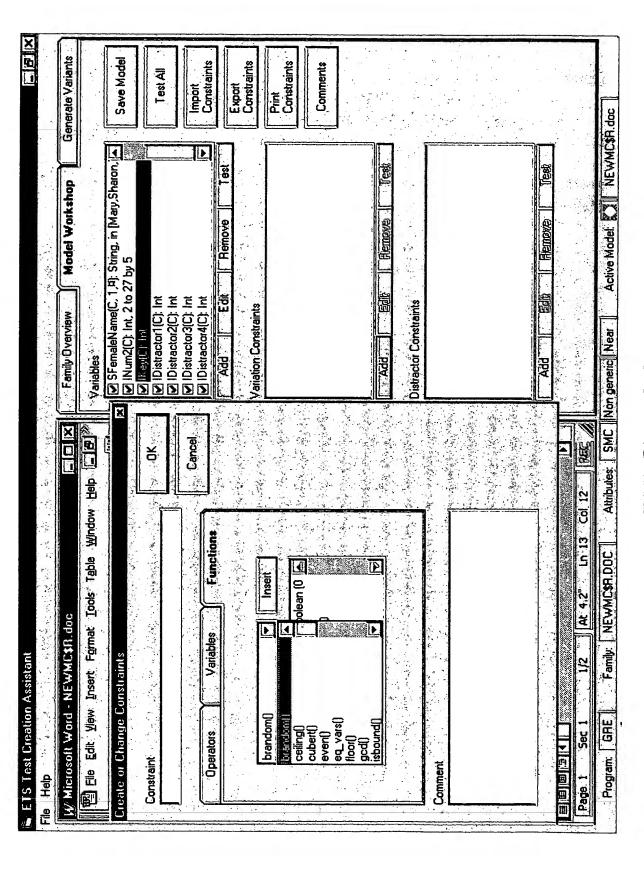


FIG. 32

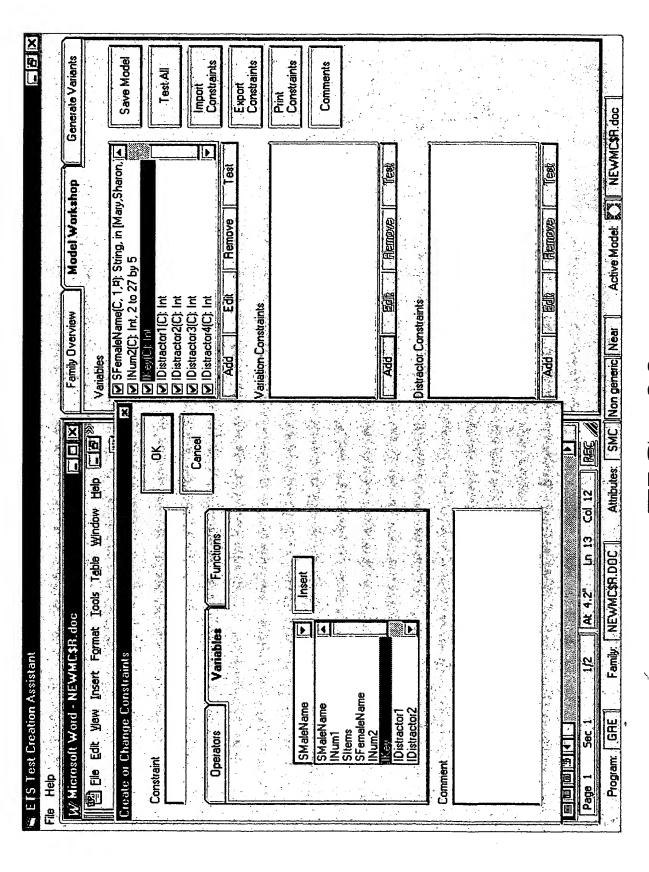


FIG. 33

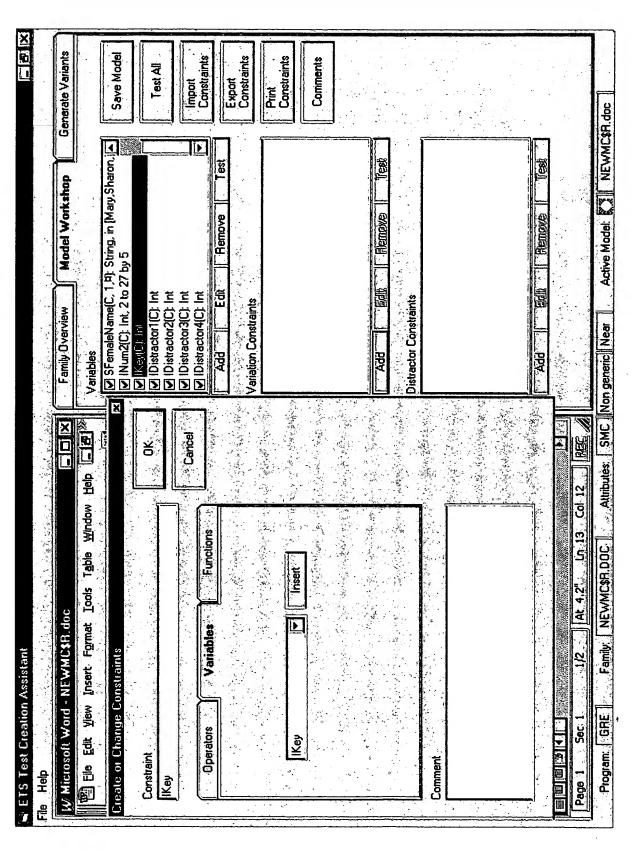


FIG. 34

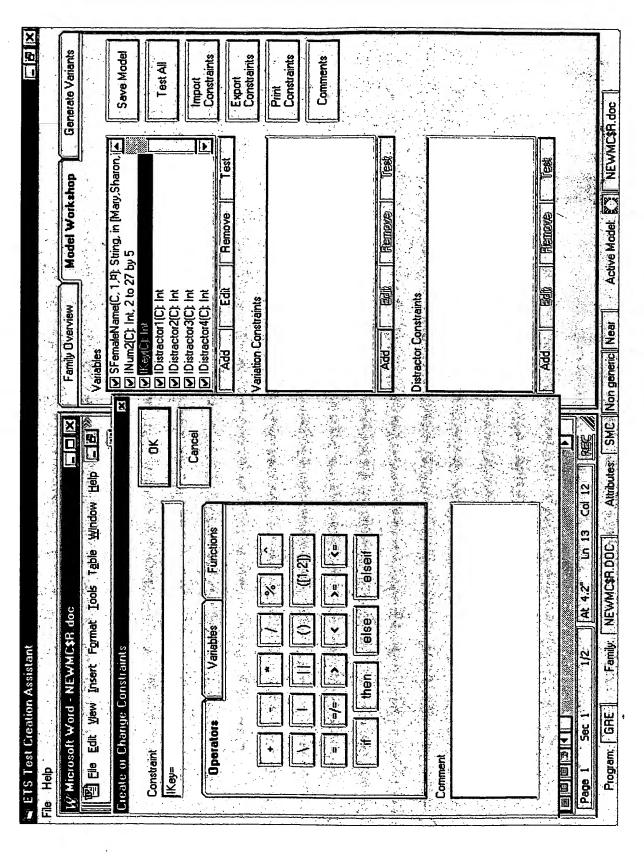


FIG. 35

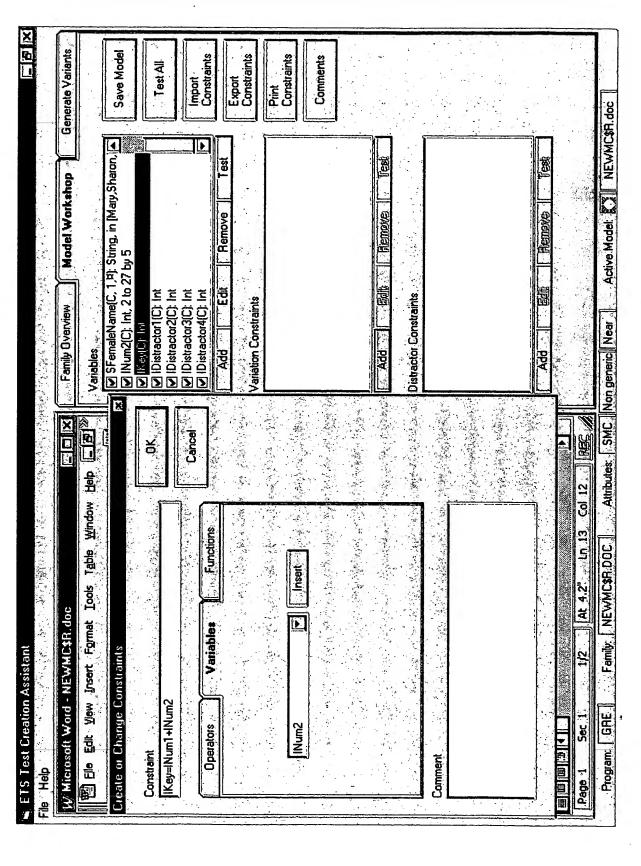


FIG. 36

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FIG. 37

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FIG. 38

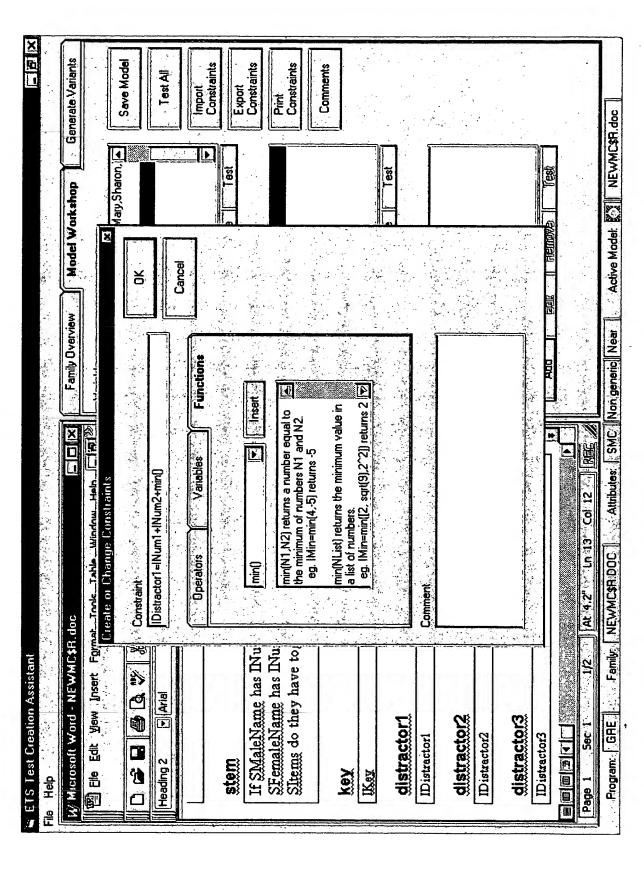


FIG. 39

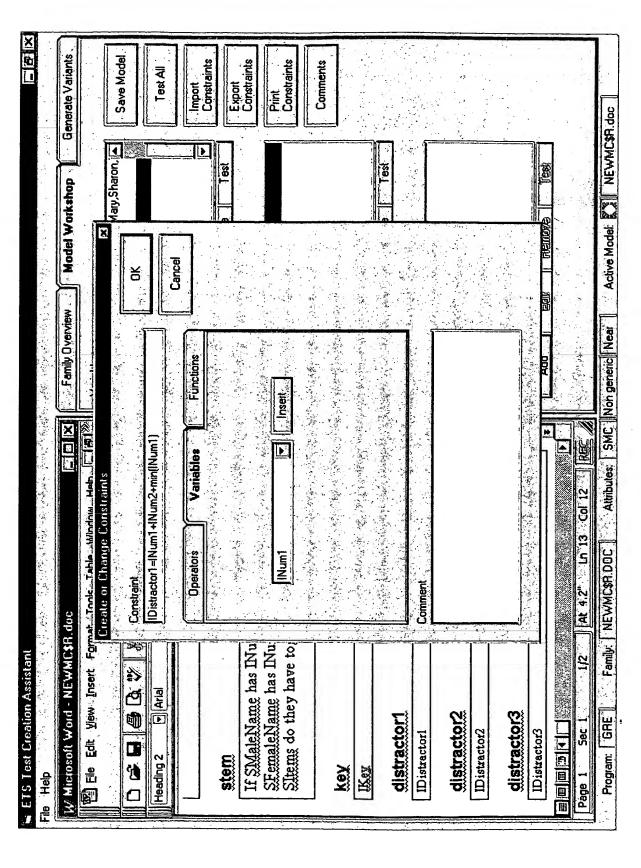


FIG. 40

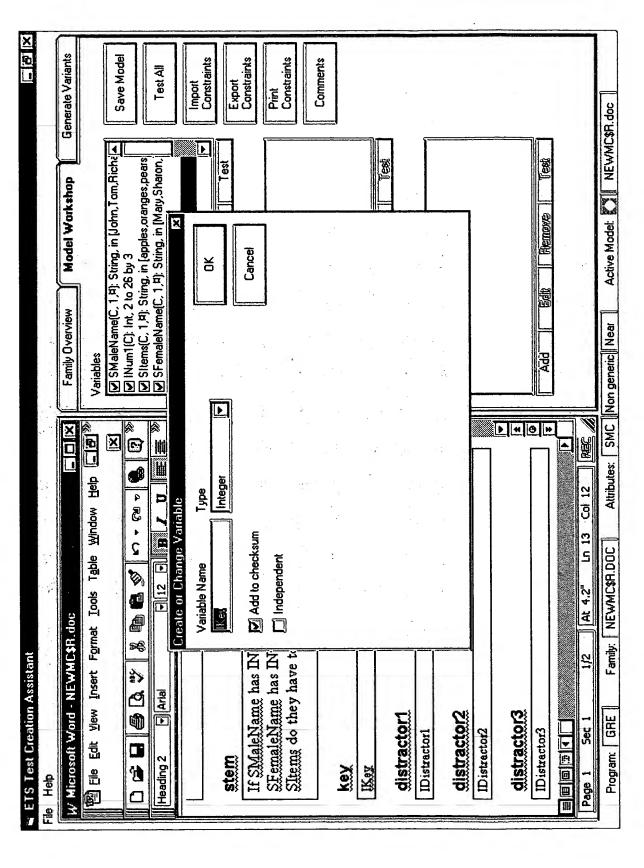


FIG. 28

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W Microsoft Word - NEWMC\$R.doc	Family Overview Model Workshop Generate Variants
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FIG. 29

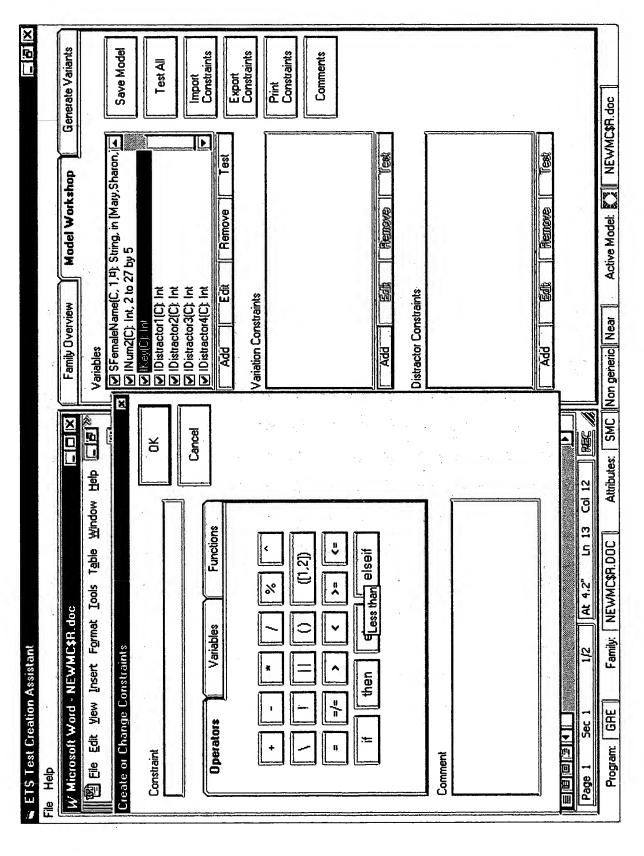


FIG. 30

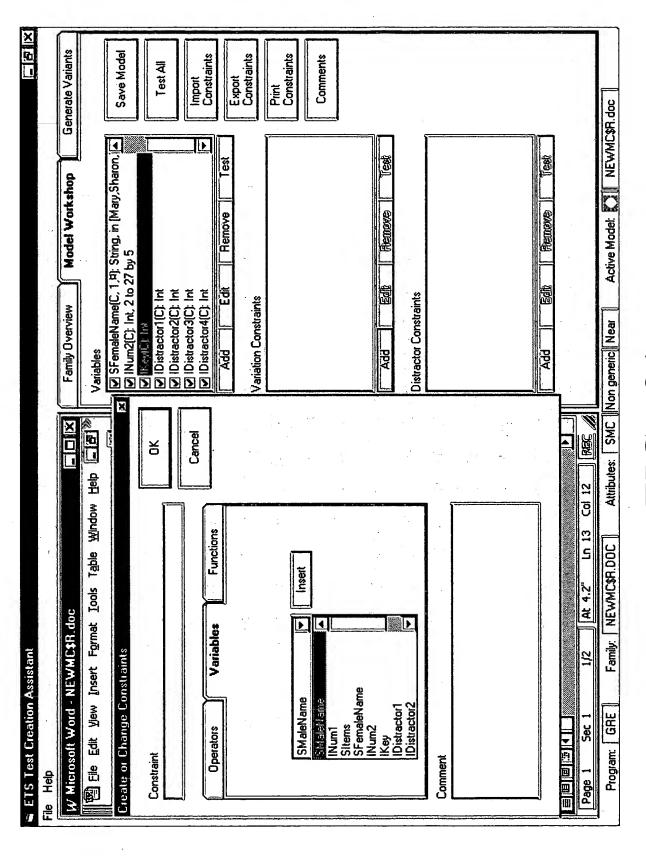


FIG. 31

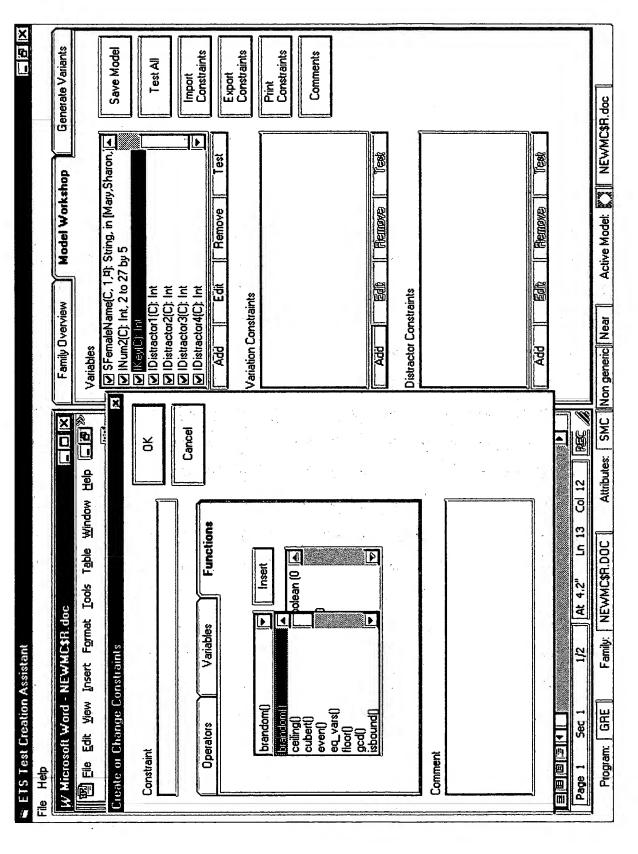


FIG. 32

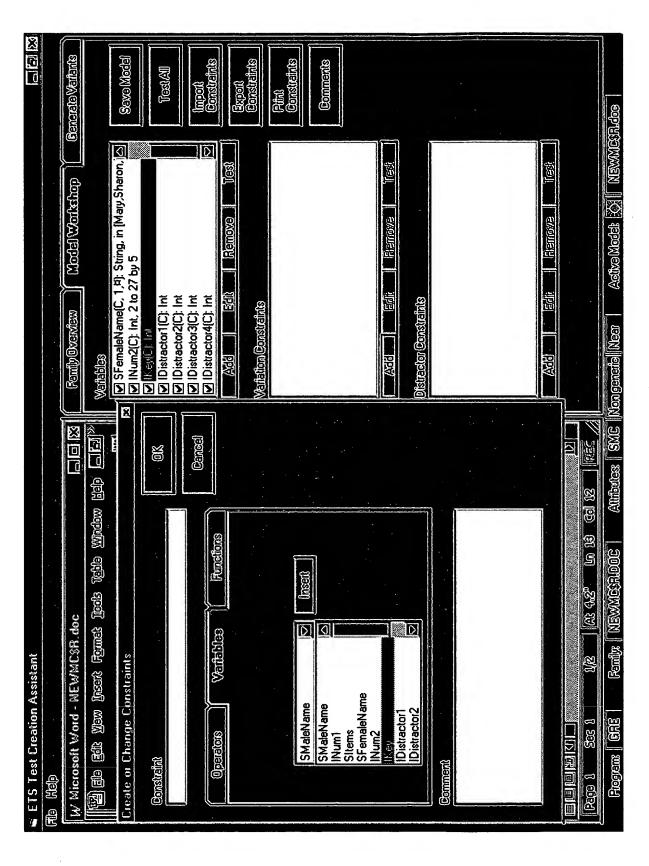


FIG. 33

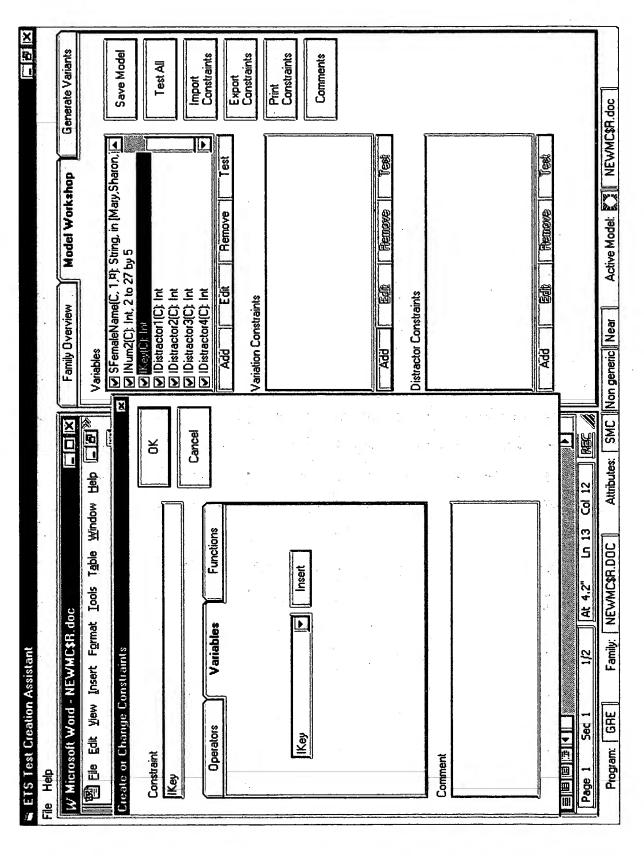


FIG. 34

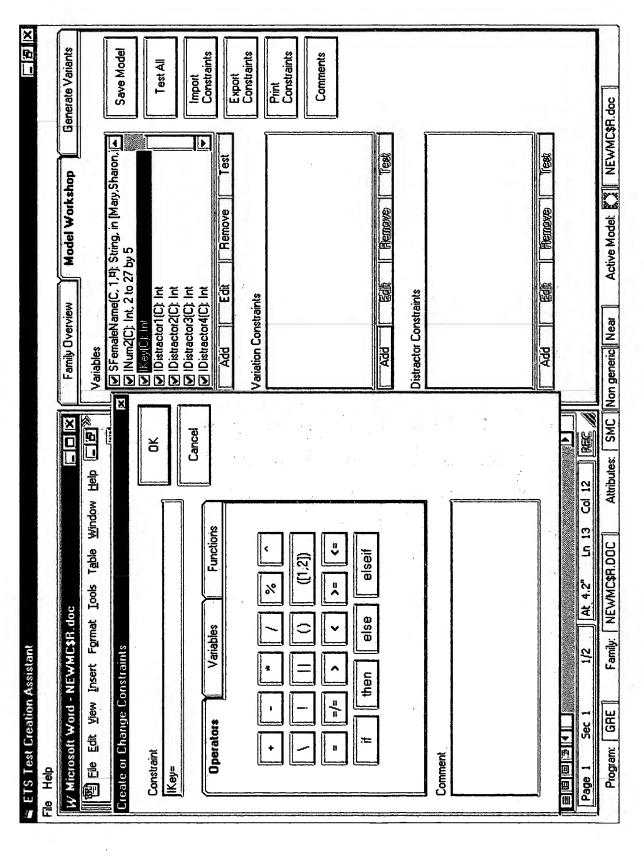


FIG. 35

	Family Overview Model Workshop Generate Variants	Variables	Save Model			actor4(C): Int actor4(C): Int	Add Edit Hemove lest Export Variation Constraints	Print Constraints	Comments	Add Edit   Remove   Test	Distractor Constraints			Add   Edit   Remove   Test		SMC Non generic Near Active Model: [ ] NEWMC\$R.doc
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FIG. 36

	Family Dverview Model Workshop Generate Variants Variables  SemaleName(C, 1, 4): String, in [Mary,Sharon,i]  Save Model  Save Model	✓ Instructor1(C): Int  ✓ I Distractor2(C): Int  ✓ ID istractor3(C): Int  ✓ ID istractor4(C): Int  ✓ ID istractor4(C): Int	Add   Edit   Remove   Test   Export   Variation Constraints   Constraints   Print   Print		[Add] Edit   Remove   Test	Distractor Lonstraints		Edit Remove	SMC Non generic Near Active Model: 2 NEWMC\$R.doc
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FIG. 37

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lle Help 17 Microsoft Word - NEWMCSB doc	Family Overview Model Workshop Generate Varients
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stem	Remove Test
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FIG. 38

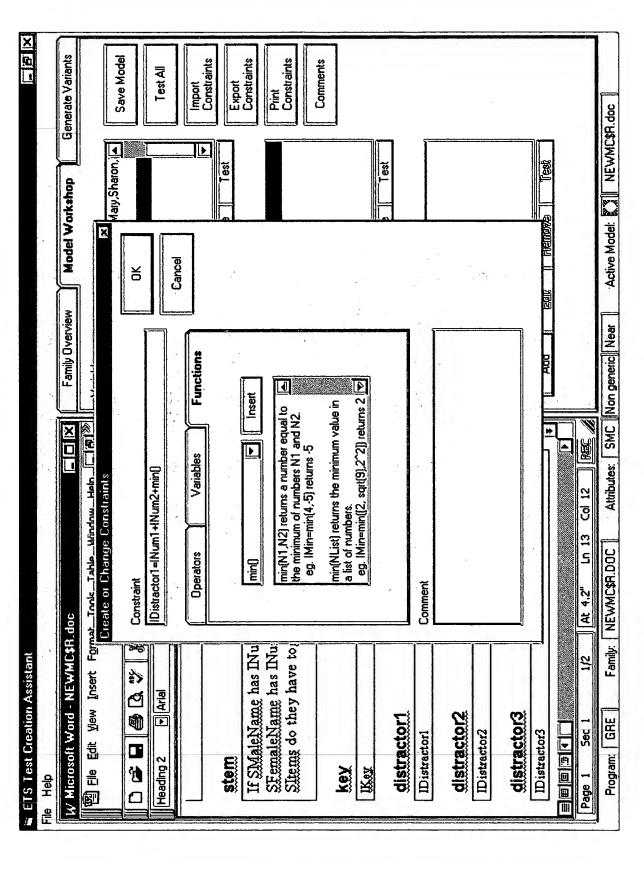


FIG. 39

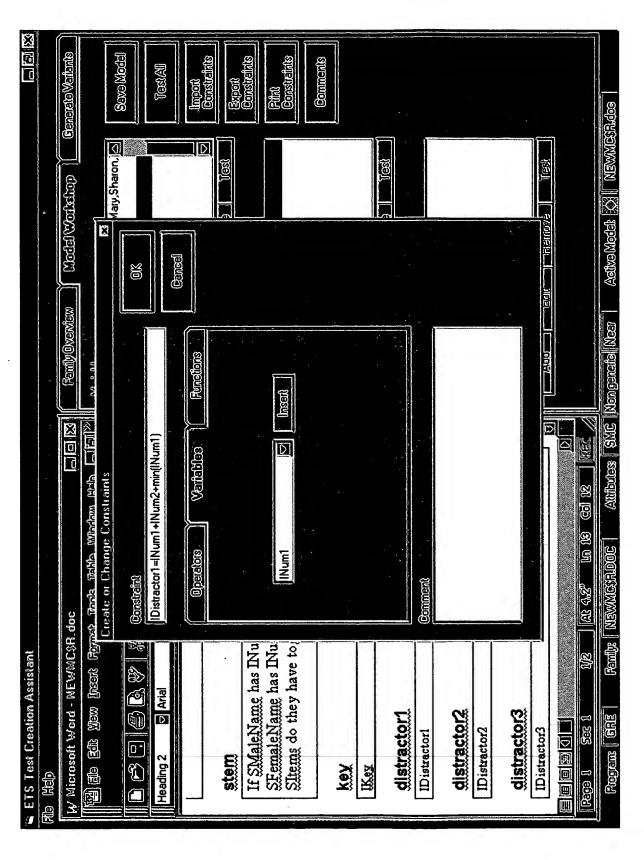


FIG. 40

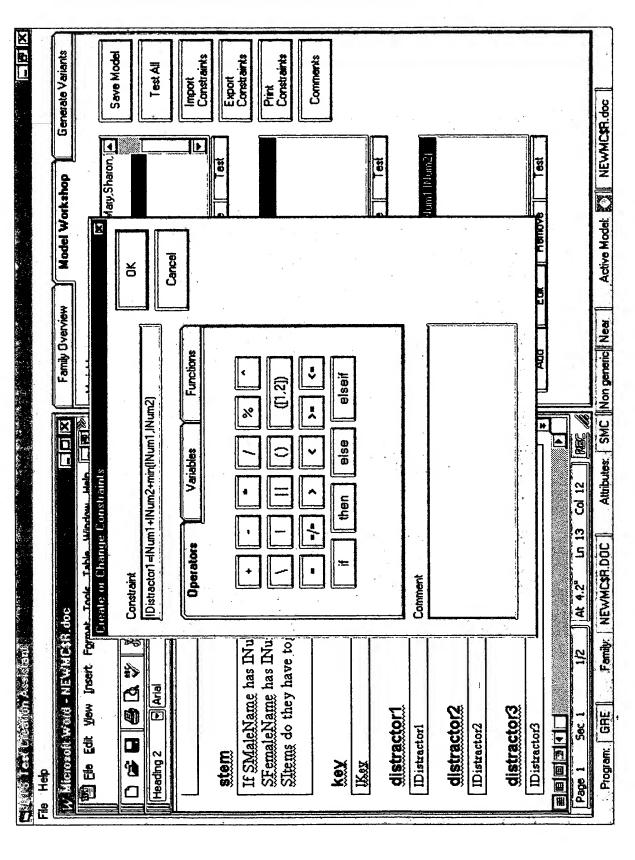


FIG. 41

	Family Overview Model Workshop Generate Varients	Variables	SFemaleName(C, 1,4): String, in [Mary,Sharon, ]— Save Model	☑ IDistractor1(C): Int ☑ IDistractor2(C): Int	☑ Distractor3(C) Int	Add Edit   Remove   Test   East	Variation Constraints	Constraints	Comments			Add Edit Remove Test					Edit Hemove Test		
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FIG. 42

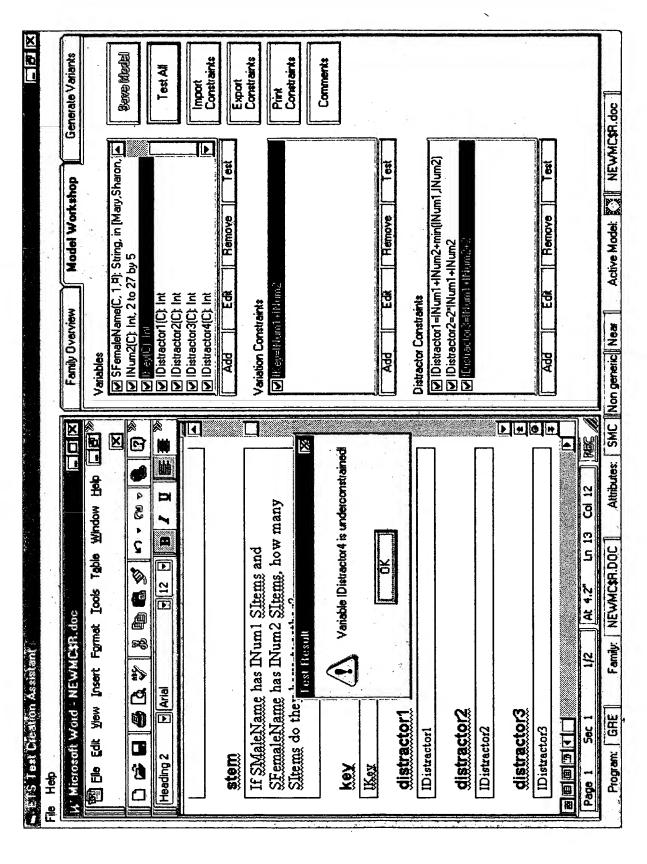


FIG. 43

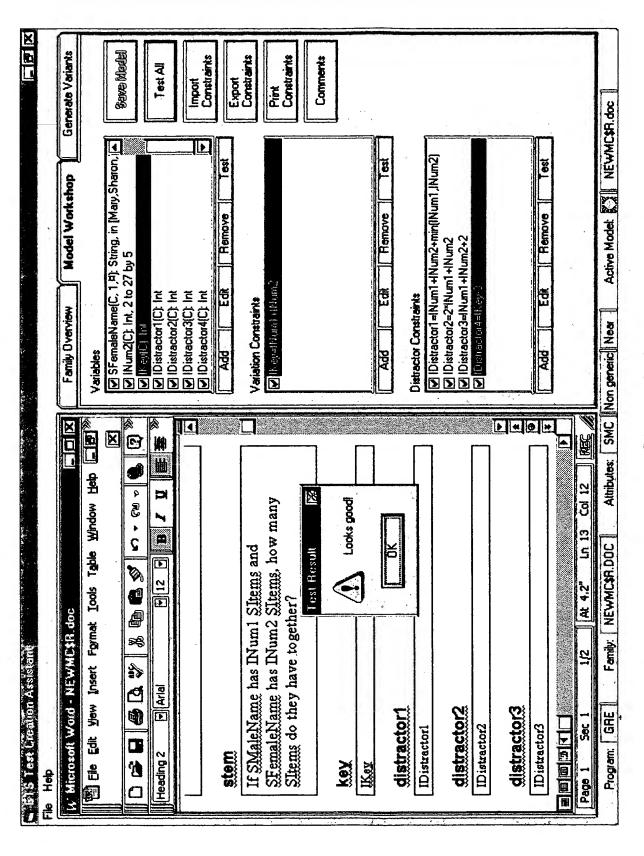
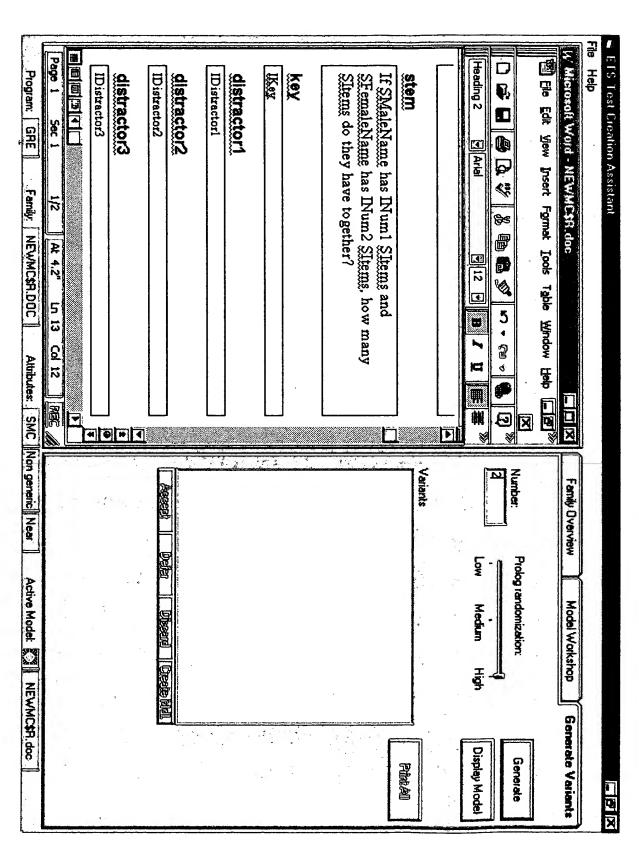


FIG. 44



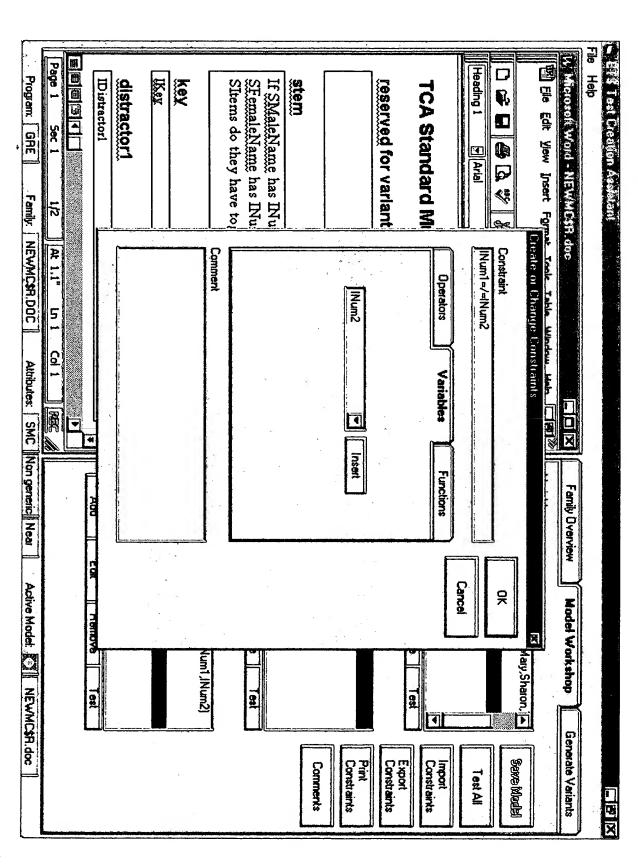


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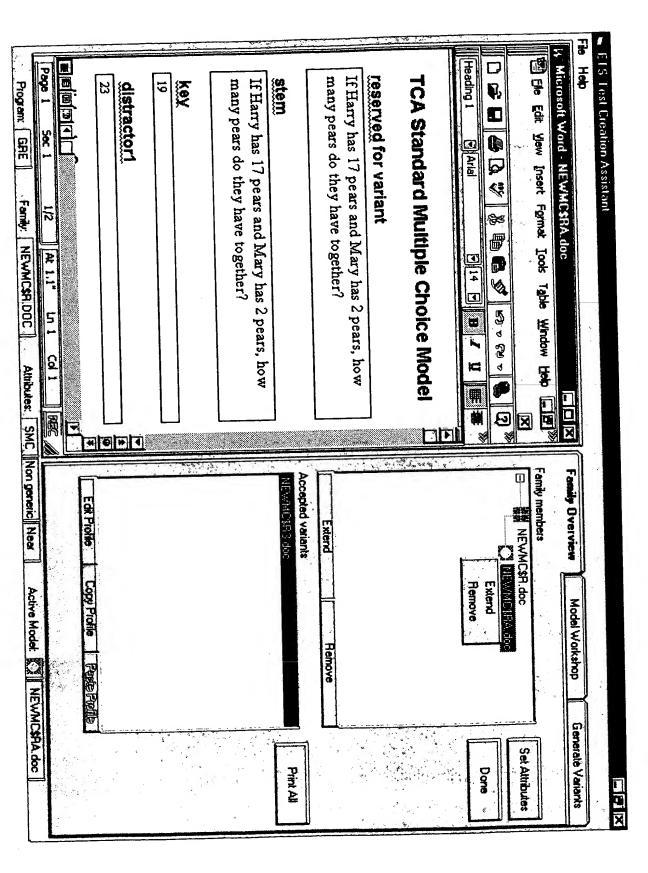
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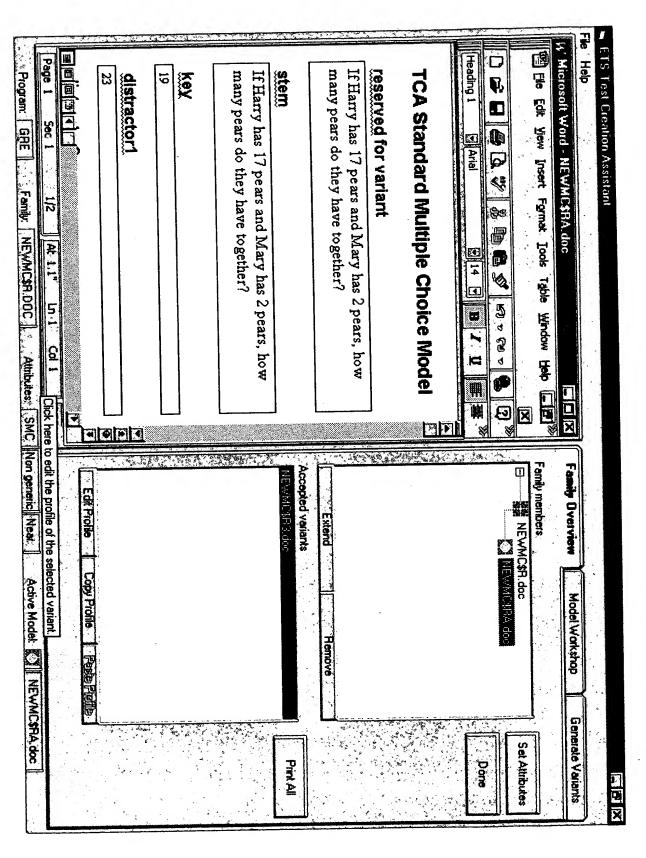
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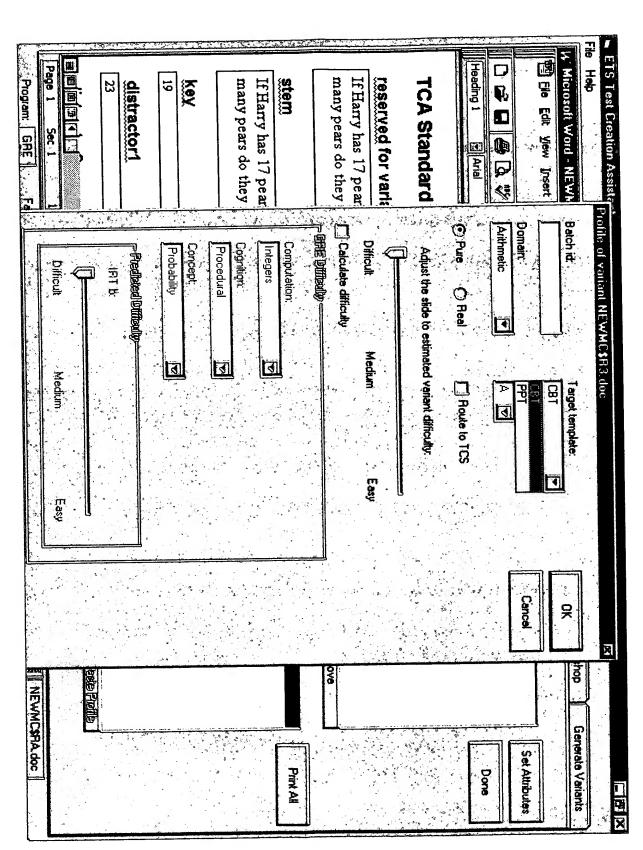




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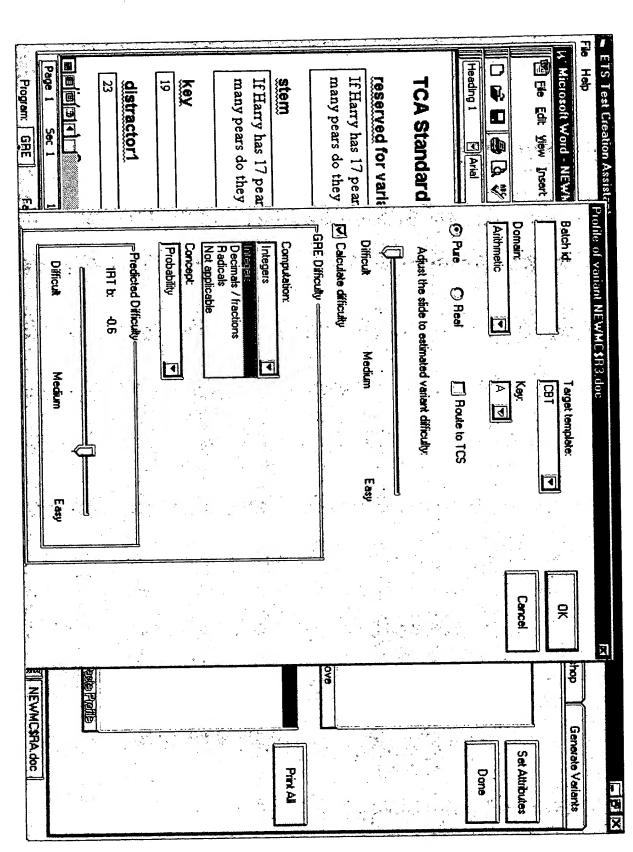
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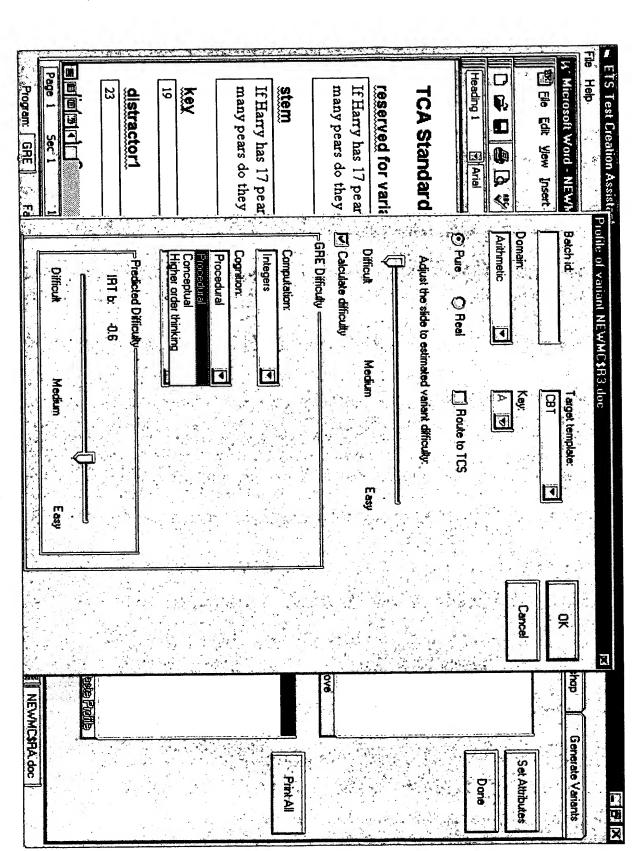




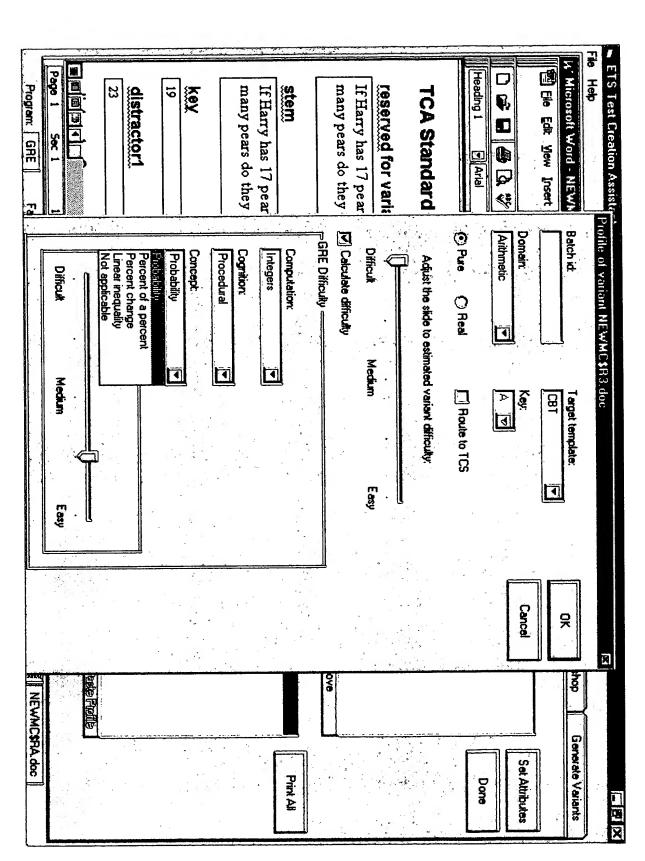
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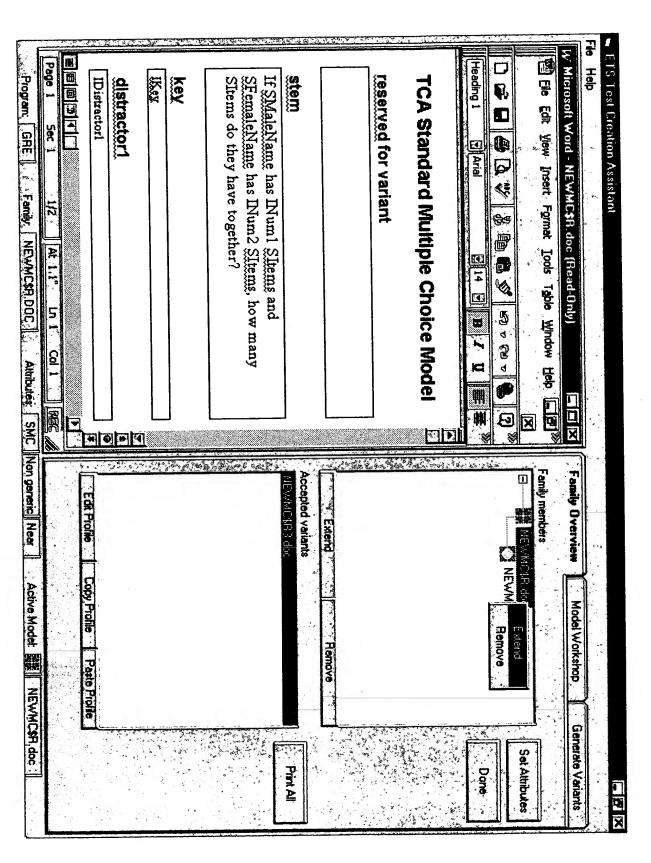


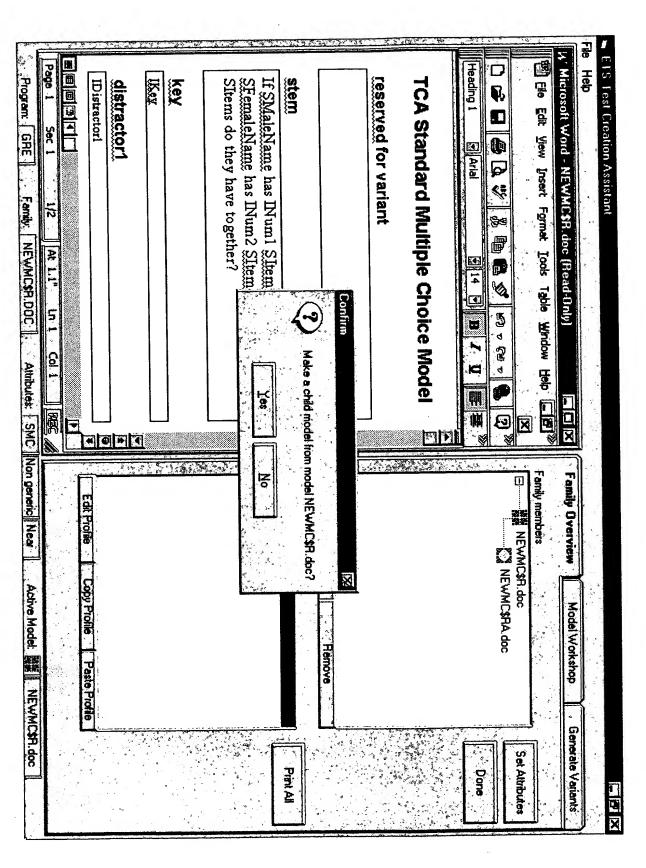


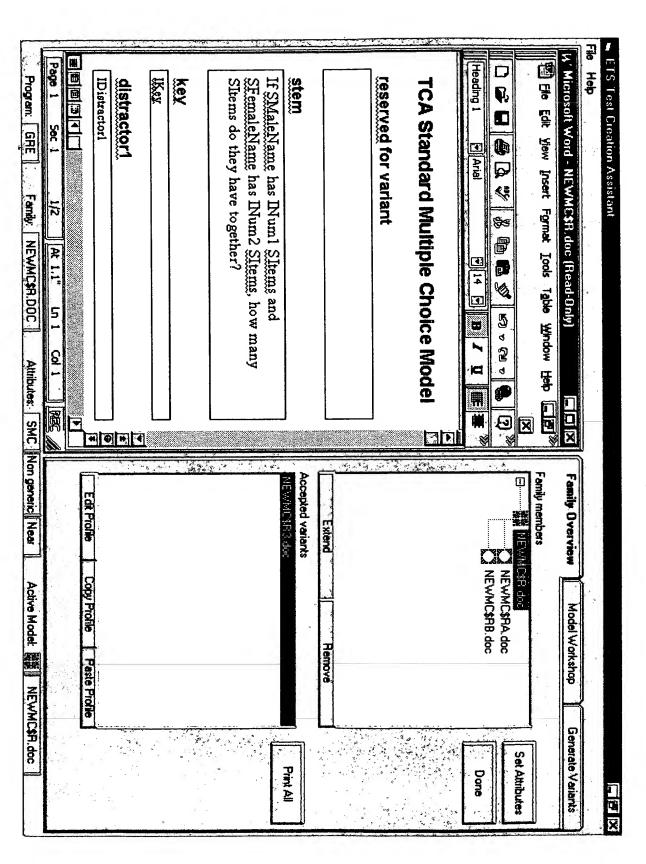














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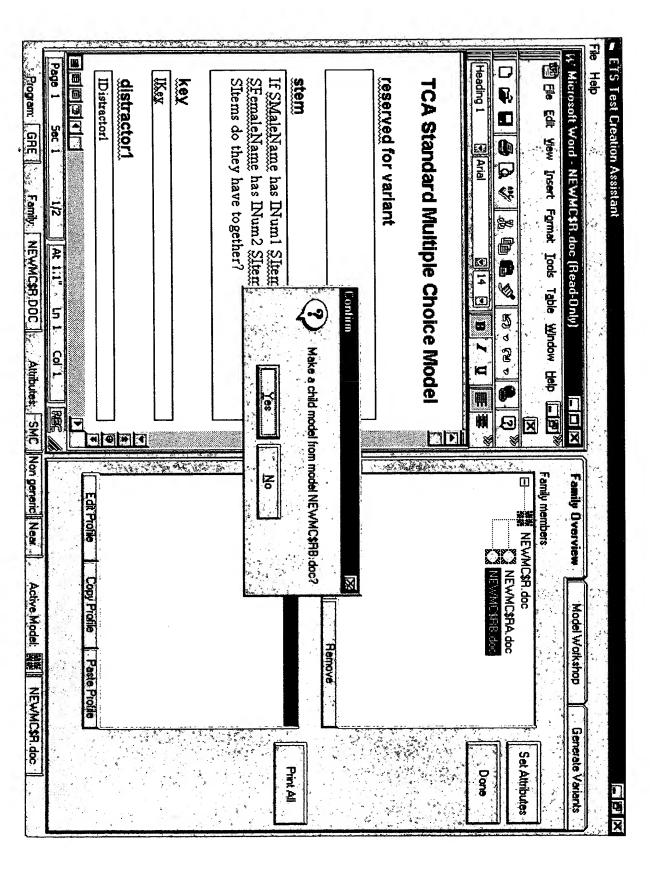
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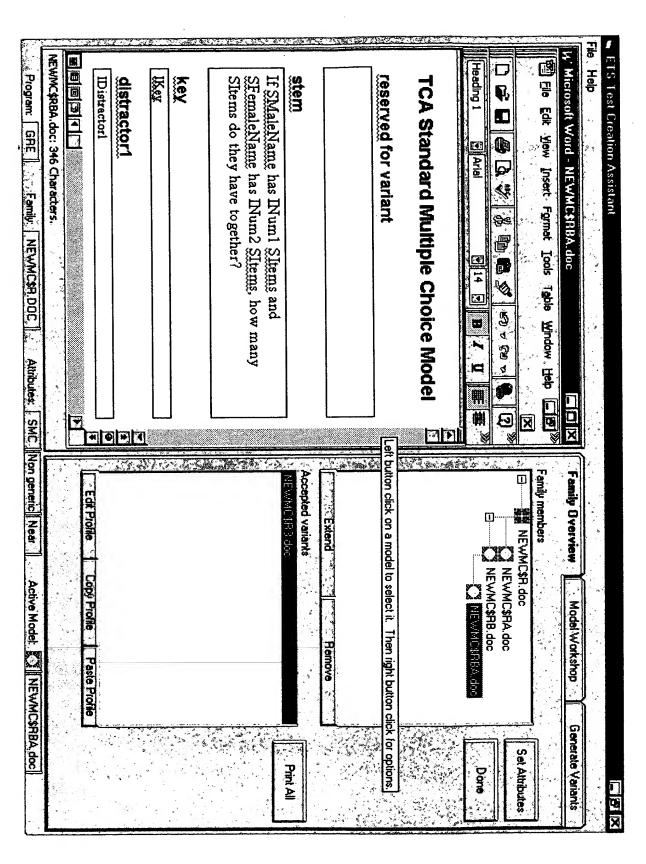
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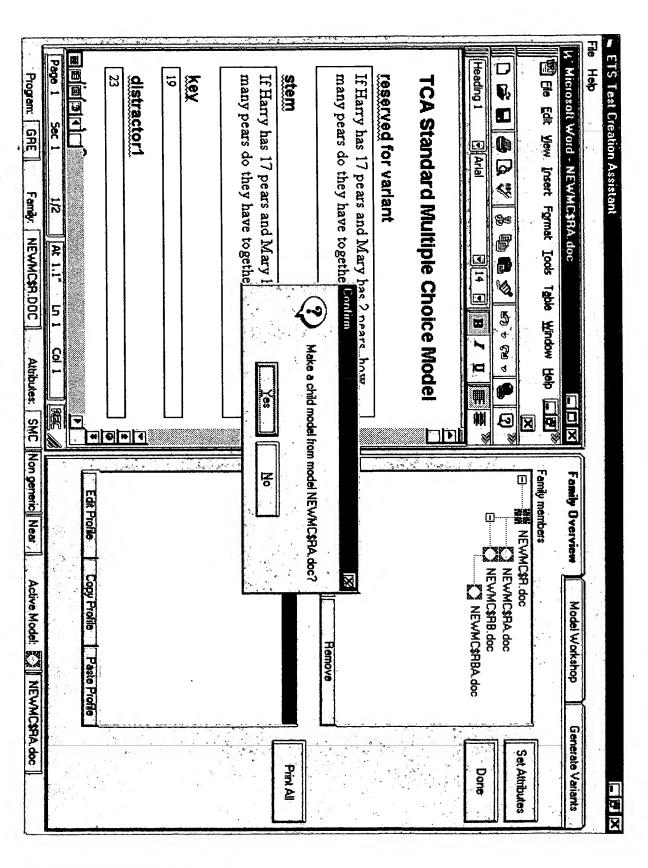


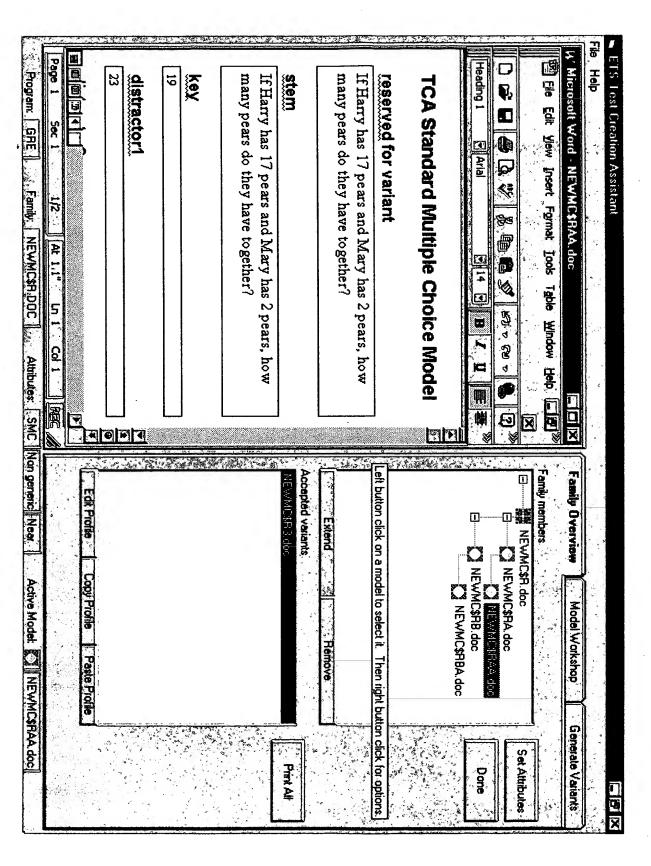
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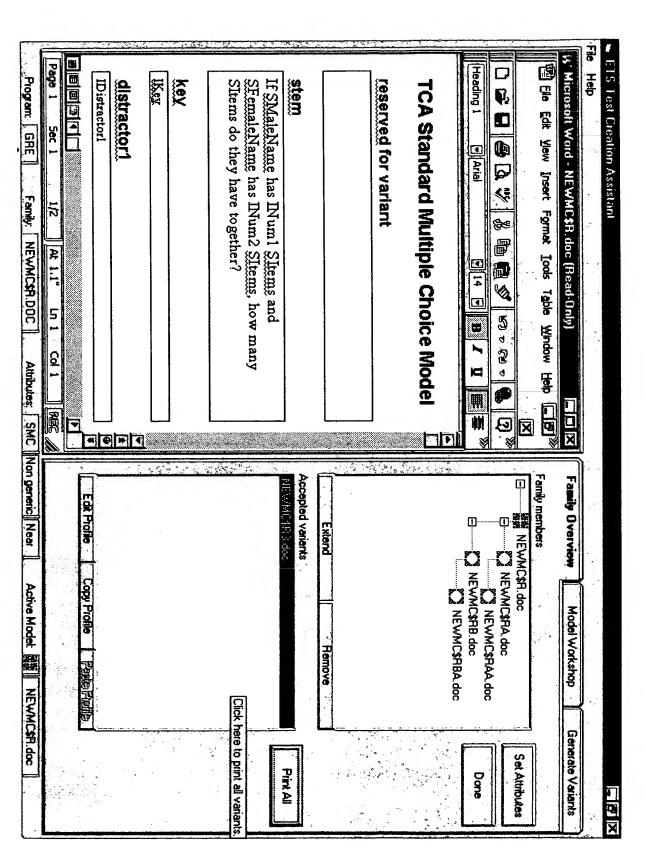








Program: GRE Family: NEWMCtH DOC Attributes: SMC	Page 1 Sec 1 1/2 At 1.1" In 1 Col 1 REC	IDistractor1	distractor1	UKey .	key	SItems do they have together?	SFemaleName has INum2 SItems, how many	stem		Left button		reserved for variant	ICA Standard Infultiple Citotice Infode		[Heading 1 ] [Arial ] [14 ]			[[] File Edit View Insert Format Iools Table Window Help [三]] []	W Microsoft Word - NEWMC\$RB.doc □□□⊠	File Help	ETS Test Creation Assistant
Attributes: SMC Non ceneric Near Active Mode: 878 NEWMCSBR doc		Add Edit Remove Test		☑ IDistractor4=lRey-3	<ul> <li>IDistractor1=INum1+INum2+2*min(INum1,INum2)</li> <li>IDistractor2=2*INum1+INum2</li> <li>IDistractor3=INum1+INum2+7</li> </ul>	Distractor Constraints	Add Edit Remove Test		Comments	nt. Then right button click for constraint	☑ IKey=INum1+INum2 Print ☑ INum1=/=INum2 Constraints	Variation Constraints Constraints	Remove   Test	☑ (Distractor3(C): Int ☑ (Distractor3(C): Int ☑ (Constraints)	☑ IDistractor1(C): Int ☑ IDistractor2(C): Int	27 by 5	SFemaleName(C, 1,¤); String, in [Mary,Sharon, ]	Variables	Family Overview   Model Workshop   Generate Variants		



#### Variables and constraints for model NEWMC\$R

```
Variables:
  Variable name: SMaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
      John
      Tom
      Richard
      Michael
      Steve
      Phil
      Jeff
      Peter
      Harry
  Variable name: INum1
   Type: Integer
   Status: Enabled
   Checksum: Enabled
   Is independent = True, Range: from 2 to 26 by 3
  Variable name: Sitems
   Type: String
   Status: Enabled
   Checksum: Enabled
   # Indexed: False
   apples
   📮 oranges
   == pears
   marbles
   pennies
      comic books
      pieces of bubble gum
      pencils
      crayons
  Variable name: SFemaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
       Mary
       Sharon
       Tina
       Michelle
```

## Variables and constraints for model NEWMC\$R

Susan Linda Crystal Deidre Variable name: INum2 Type: Integer Status: Enabled Checksum: Enabled Is independent = True, Range: from 2 to 27 by 5 Variable name: IKey Type: Integer Status: Enabled Checksum: Enabled Is independent = False Variable name: IDistractor1 Type: Integer Checksum: Enabled is independent = False Variable name: IDistractor2 Type: Integer Status: Enabled Checksum: Enabled is independent = False Variable name: IDistractor3 Type: Integer Status: Enabled Checksum: Enabled Is independent = False Variable name: IDistractor4 Type: Integer Status: Enabled Checksum: Enabled Is independent = False Constraints: Variation constraints: Constraint: IKey=INum1+INum2 Status: Enabled Constraint: INum1=/=INum2 Status: Enabled Distractor constraints: Constraint: IDistractor1=INum1+INum2+2\*min(INum1,INum2)

Status: Enabled

Status: Enabled

Constraint: IDistractor3=INum1+INum2+7

Constraint: IDistractor2=2\*INum1+INum2

## Variables and constraints for model NEWMC\$R

Status: Enabled

Constraint: IDistractor4=IKey-3 Status: Enabled

Hins, offens Wing, offens Some South West, H. W.

SMC Non generic Near Active Model: NEWMC\$RA.doc	gram: GRE Family: NEWMC\$R.DOC Attributes:
	Page 1 Sec 1 1/2   At 1.1" Ln 1 Col 1   阳記
	EEE CONTRACT
Add Edit Remove lest	
	23
	distractor1
▼  Distractor3#Num1+Num2+7	19
	key
Distractor Constraints	
Add   Cax   Leurove   Less	many pears do they have together?
	If Harry has 17 pears and Mary has 2 pears, how
	stem
Ī	
Click here to print all variables	many pears do they have together?
☑   Key= Num1+ Num2   Print	If Harry has 17 pears and Mary has 2 pears, how
Variation Constraints Constraints	reserved for variant
Add Edit Remove Test Export	
Distractor3(C) Int   I Distractor4(C) Int   Constraints	TCA Standard Multiple Choice Model
✓ IDistractor2(C): Int  ✓ IDistractor2(C): Int	
1	
ng, in [Mary,Sharon,]🏊	X
Variables	Elle Edit Yew Insert Format Jools Table Window Help
Family Overview     Model Workshop   Generate Variants	以'Microsoft Word - NEWMC\$RA.doc
	File Help
	■ ETS Test Creation Assistant



## Variables and constraints for model NEWMC\$RA

```
Variables:
  Variable name: SMaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
      John
      Tom
      Richard
      Michael
      Steve .
      Phil
      Jeff
      Peter
      Harry
  Variable name: INum1
   Status: Enabled
   Checksum: Enabled
   is independent = True, Range: from 2 to 26 by 3
  Variable name: Sitems
   #Type: String
   Status: Enabled
   ... Checksum: Enabled
   findexed: False
   .₌Values:
   apples
   oranges
   pears
      marbles
       pennies
       comic books
       pieces of bubble gum
       pencils
       crayons
  Variable name: SFemaleName
     Type: String
     Status: Enabled
     Checksum: Enabled
     Indexed: False
     Values:
       Mary
       Sharon
       Tina
       Michelle
```

## Variables and constraints for model NEWMC\$RA

Susan Linda Crystal Deidre

Variable name: INum2
Type: Integer
Status: Enabled
Checksum: Enabled

Is independent = True, Range: from 2 to 27 by 5

Variable name: IKey
Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor1

Type: Integer

Status: Enabled

Checksum: Enabled

Its independent = False

Variable name: IDistractor2

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor3

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor4

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False

Constraints:

Variation constraints:

Constraint: IKey=INum1+INum2

Status: Enabled

Constraint: INum1=/=INum2

Status: Enabled Distractor constraints:

Constraint: IDistractor1=INum1+INum2+2\*min(INum1,INum2)

Status: Enabled

Constraint: IDistractor2=2\*INum1+INum2

Status: Enabled

Constraint: IDistractor3=INum1+INum2+7

## Variables and constraints for model NEWMC\$RA

Status: Enabled Constraint: IDistractor4=IKey-3 Status: Enabled

## FILE: NEWMC\$R.doc

## **TCA Standard Multiple Choice Model**

# reserved for variant stem If SMaleName has INum1 SItems and SFemaleName has INum2 SItems, how many SItems do they have together? key **IKey** distractor1 **Distractor1** distractor2 IDistractor2 distractor3 IDistractor3 distractor4 IDistractor4 distractor5 Distractor5 distractor6 Distractor6 distractor7 Distractor7 distractor8 Distractor8 scratch pad

FIG. 83

Scratch Pad Area

## FILE: NEWMC\$R3.doc

## **TCA Standard Multiple Choice Model**

## reserved for variant

If Tom has 2 comic books and Crystal has 12 comic books, how many comic books do they have together?

#### stem

If Tom has 2 comic books and Crystal has 12 comic books, how many comic books do they have together?

# key 14 distractor1 18 distractor2 16 distractor3

## 21

# distractor4

## 11

## distractor5

## Distractor5

# Distractor6

# distractor7 Distractor7

# Distractor8

# scratch pad Scratch Pad Area

# FIG. 84

= =

## FILE: NEWMC\$R4.doc

## **TCA Standard Multiple Choice Model**

## reserved for variant

If Harry has 17 pears and Mary has 2 pears, how many pears do they have together?

#### stem

If Harry has 17 pears and Mary has 2 pears, how many pears do they have together?

## key

19

## distractor1

23

#### distractor2

36

#### distractor3

26

## distractor4

16

## distractor5

Distractor5

## distractor6

**Distractor6** 

## distractor7

Distractor7

#### distractor8

Distractor8

## scratch pad

Scratch Pad Area

### **TCA Standard Multiple Choice Model**

### reserved for variant

If Harry has 17 pears and Mary has 2 pears, how many pears do they have together?

### stem

If Harry has 17 pears and Mary has 2 pears, how many pears do they have together?

### key

19

### distractor1

23

### distractor2

36

### distractor3

26

### distractor4

16

### distractor5

Distractor5

### distractor6

Distractor6

### distractor7

Distractor7

### distractor8

Distractor8

### scratch pad

Scratch Pad Area

FIG. 86

### FILE: NEWMC\$RB.doc

### **TCA Standard Multiple Choice Model**

reserved for variant	
stem	
If SMaleName has INum1 Sl	Items and
SFemaleName has INum2 SI	Items, how many
SItems do they have together	·?
key	
IKey	
diates atout	
distractor1	
IDistractor1	
distractor2	
IDistractor2	
distractor3	
IDistractor3	
distractor4	
IDistractor4	
distractor5	
Distractor5	
distractor6	
Distractor6	
distractor7	
Distractor7	
distractor8	•
Distractor8	
scratch pad	
Scratch Pad Area	

The state of the s

### FILE: NEWMC\$RBA.doc

### **TCA Standard Multiple Choice Model**

-4	
stem	1 014 1
If SMaleName has INu	im1 Sitems and im2 Sitems, how many
Stems do they have to	-
key	
IKey	
distractor1	
IDistractor l	
distractor2	
IDistractor2	
distractor3	
IDistractor3	
distractor4	
IDistractor4	
distractor5	
Distractor5	
distractor6	
Distractor6	
distractor7	
Distractor7	
distractor8	
Distractor8	
scratch pad	
Scratch Pad Area	
SCIZIO PZO ATEZ	

FIG. 88

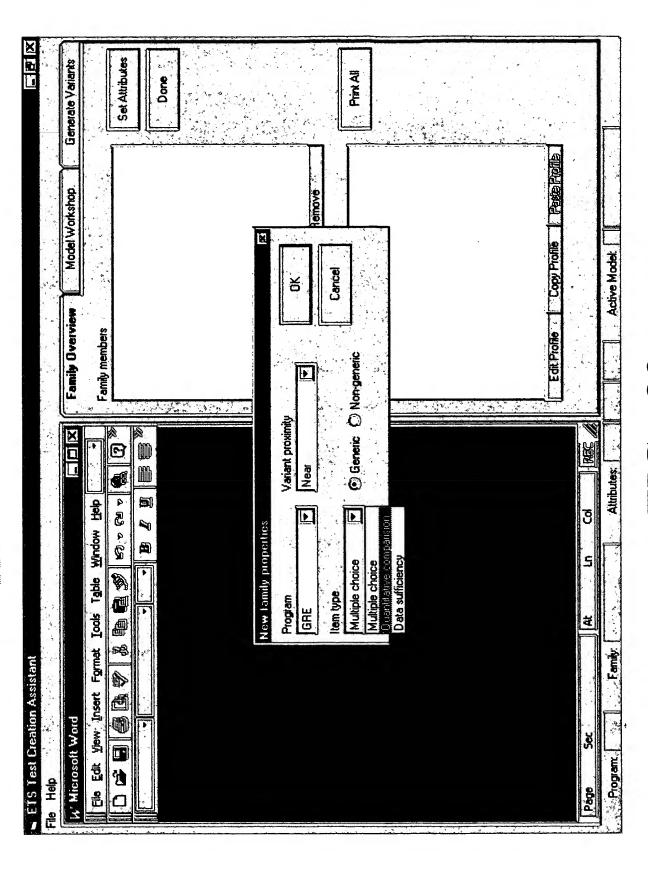


FIG. 89

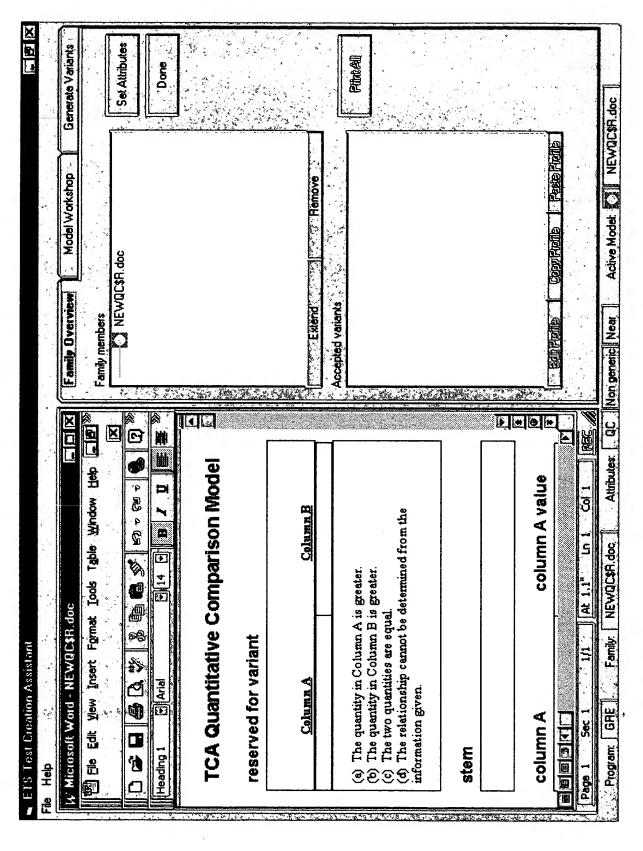


FIG. 90

### FILE: NEWQC\$R.doc

### **TCA Quantitative Comparison Model**

### reserved for variant

<u>Column A</u>	Column B
<ul> <li>(a) The quantity in Column A</li> <li>(b) The quantity in Column B</li> <li>(c) The two quantities are equ</li> <li>(d) The relationship cannot be information given.</li> </ul>	is greater. al.

## column A value

### column B column B value

## key

### Key

### Key

# Scratch pad

### Pad Area

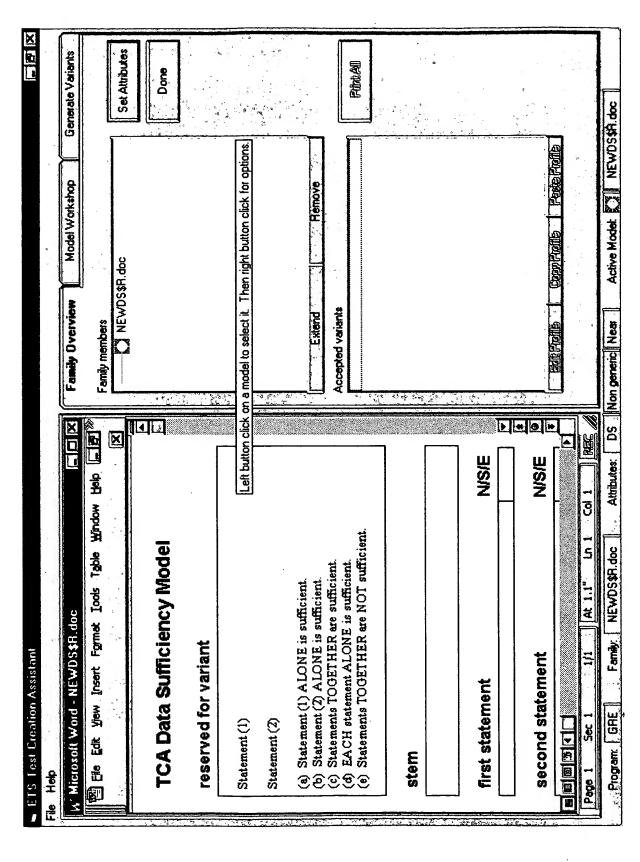


FIG. 92

### FILE: NEWDS\$R.doc

### **TCA Data Sufficiency Model**

### reserved for variant

Statement (1)

Statement (2)

- (a) Statement (1) ALONE is sufficient.
- (b) Statement (2) ALONE is sufficient.
- (c) Statements TOGETHER are sufficient.
- (d) EACH statement ALONE is sufficient.
- (e) Statements TOGETHER are NOT sufficient.

_	4	_	_	_

Scratch Pad Area

first statement	N/S/E
second statement	N/S/E
key	•
Key	
scratch nad	

# 1 With affert Birt, effort Trees

	Family Overview   Model Workshop Generate Variants
TCA Standard Multiple Choice Model    Gibistractor3(C): Int   Gibistractor3(C)	S FemaleName(C, 1, ♯): String, in [Holly,Mary,Telange]  Serve [MedB]  Value   Num2(C): Int, 4 to 12 by 1  Value   Key(C): Int, 4 to 12 by 1  Value   Instructor   C : Int, 4 to 12 by 1  Value   Distractor   C : Int, 4 to 12 by 1
Variation Constraints  Variation Constraints  ✓ Ikey = Irlum! + Itlum.	Hemove   Test
If SMeleName had INum1 SThing and SEemaleName had INum2  SThing, how many SThing did they have together?  Distractor Constraints  OIDistractor = INum1 * INum2  I Distractor = INum1 * INum2  I Distractor = Inum1 * INum2  I Distractor = Inum1 * Inum1 * INum2  I Distractor = Inum1 * Inum1	Seld   Browse   Remove   Test
Kex	Browse   Remove   Test

FIG. 94

### FILE: MICNEWMC\$R1.doc

### **TCA Standard Multiple Choice Model**

### reserved for variant

If Bill had 2 apples and Teresa had 5 apples, how many apples did	
they have together?	
A. 3	
B. 4	
C. 7	
D. 10	
E. 13	
Key is C	

### stem

If Bill had 2 apples and Teresa had 5 apples, how many apples did they have together?

### key

7

### distractor1

3

### distractor2

10

### distractor3

13

### distractor4

4

### distractor5

Distractor5

### distractor6

Distractor6

### distractor7

Distractor7

### distractor8

Distractor8

### scratch pad

Scratch Pad Area

FIG. 95

### FILE: MICNEWMC\$RA.doc

### **TCA Standard Multiple Choice Model**

### reserved for variant

Hou often Bon often Ven Last Hon H The

reserved for variable
If Bill had 2 apples and Joan had 4 apples, how many apples did they
have together?
A. 2
B. 4
C. 6
D. 8
E. 10
Key is C
stem
If Bill had 2 apples and Joan had 4 apples, how many apples did they
have together?
key
6
distractor1
2
distractor2
8
8
distractor3
10
distractor4
4
distractor5
Distractor5
Distractors
distractor6
Distractor6
distractor7
Distractor7
distractor8
Distractor8
scratch pad

FIG. 96

Scratch Pad Area

FILE:

### MICNEWMC\$R2.doc

### **TCA Standard Multiple Choice Model**

### reserved for variant

Bill had 2 apples and Joan had 4 apples, how many apples did the	y
ave together?	
2	
. 4	
. 6	
0. 8	
. 10	
ey is C	

### stem

If Bill had 2 apples and Joan had 4 apples, how many apples did they have together?

# have together? key 6 distractor1 2 distractor2 8 distractor3 10 distractor4

### distractor5

Distractor5

### distractor6

Distractor6

### distractor7

Distractor7

### distractor8

Distractor8

### scratch pad

Scratch Pad Area

FIG. 97

A THE STATE OF THE SECOND SECO

### Variables and constraints for model MICNEWMC\$R

```
Variables:
  Variable name: SMaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
      Michael
      Bill
      Harry
      Roger
  Variable name: INum1
    Type: Integer
    Status: Enabled
    Checksum: Enabled
    Is independent = True, Range: from 2 to 8 by 1
  Variable name: SThing
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
    apples
    uzis
  Variable name: SFemaleName
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
    Holly
      Mary
      Teresa
       Joan
  Variable name: INum2
    Type: Integer
    Status: Enabled
    Checksum: Enabled
    Is independent = True, Range: from 4 to 12 by 1
  Variable name: IKey
    Type: Integer
    Status: Enabled
    Checksum: Enabled
    Is independent = False
  Variable name: IDistractor1
    Type: Integer
```

### Variables and constraints for model MICNEWMC\$R

Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor2
Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor3

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False
Variable name: IDistractor4

Type: Integer
Status: Enabled
Checksum: Enabled
Is independent = False

### Constraints:

Variation constraints:

Constraint: IKey = INum1 + INum2

Status: Enabled Distractor constraints:

Constraint: IDistractor1 = |INum1 - INum2|

s Status: Enabled

Constraint: IDistractor2 = INum1 \* INum2

Status: Enabled

Constraint: IDistractor3 = IDistractor1 + IDistractor2

Status: Enabled

Constraint: IDistractor4 = 2 \* INum1

Status: Enabled

Ш	ETS Test Creation Assistant				
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3	4. Microsoft Word - MICNEWQC\$R.do	3.doc (Read-Only) ☐☐ 🔀	Family Overview	Model Workshop	Generate Variants
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		X	MINISTER MICHENDICATE CONTROL OF	ITNEWDOSIB GOOT WICHEWOOD AND A MICHEW GCSPA. doc	Set Attributes
	TCA Quantitative Comparison Model				Done
	reserved for variant				
	Column A	ColumnB			o de la companya de l
			\$ P. C.		
		greater. greater.	Extend	Hemove	
		mined from the information	Accepted variants		Print All
	given.		MICNEWQC\$R6.doc		
	stem		MICNEWQC\$88.doc		
	An article of clothing was reduced in price by x percent from \$[OxignalRrice to \$[ReducedRrice. Later, the price was increased y percent to return the price to \$[OxignalRrice.	ed in price by x percent from Eg. Later, the price was increased  QxigmedRxice.			
	column A	column B			
<u> </u>	× = = = = = = = = = = = = = = = = = = =	4	Edit Profie	Copy Profile   Page Profile	
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	Fingram:   GHE   Family:   MICNEWULSH.DUC	WULSH. DUL Attributes:   UL	Non generical New	Active Model: 関語    MILNEWULTH. doc	.Wull\$H.doc

FIG. 99

### FILE: MICNEWQC\$R.doc

### **TCA Quantitative Comparison Model**

### reserved for variant

# (a) The quantity in Column A is greater. (b) The quantity in Column B is greater. (c) The two quantities are equal. (d) The relationship cannot be determined from the information given.

### stem

An article of clothing was reduced in price by x percent from \$IOriginalPrice to \$IReducedPrice. Later, the price was increased by y percent to return the price to \$IOriginalPrice.

column A	column B
x	у
x + 1	v - 1

### key

Key

### scratch pad

Scratch Pad Area

### FILE: MICNEWQC\$R1.doc

### **TCA Quantitative Comparison Model**

### reserved for variant

An article of clothing was reduced in price by x percent from \$20 to \$16. Later, the price was increased by y percent to return the price to \$20.

Column A Column B

x + 1

- 1 9 1
- (a) The quantity in Column A is greater.
- (b) The quantity in Column B is greater.
- (c) The two quantities are equal.
- (d) The relationship cannot be determined from the information given.

### stem

An article of clothing was reduced in price by x percent from \$20 to \$16. Later, the price was increased by y percent to return the price to \$20.

### column A

### column B

X	у
x + 1	y - 1

### key

Key

### scratch pad

Scratch

Pad

Area

### FILE: MICNEWQC\$R5.doc

### **TCA Quantitative Comparison Model**

### reserved for variant

An article of clothing was reduced in price by x percent from \$25 to \$20. Later, the price was increased by y percent to return the price to \$25.

 Column A
 Column B

 x + 1
 y

- (a) The quantity in Column A is greater.
- (b) The quantity in Column B is greater.
- (c) The two quantities are equal.
- (d) The relationship cannot be determined from the information given.

### stem

An article of clothing was reduced in price by x percent from \$25 to \$20. Later, the price was increased by y percent to return the price to \$25.

### column A column B

X	у
x + 1	y - 1

### key

Key

### scratch pad

Scratch
Pad
Area

			X    Set Attributes	Dome				Accepted variants	Futher All					
ETS Test Greation Assistant	THE THEFT THE MICHENNIS CENTRE	Fig. Edit View Insert Format Tooks Table Window Help		TCA Data Sufficiency Model	reserved for variant	Statement (1)	Statement (Z)	(a) Statement (1) ALONE is sufficient. (b) Statement (2) ALONE is sufficient. (c) Statements TOGETHER are sufficient. (d) FACH extrement ALONE is sufficient.	(e) Statements TOGETHER are NOT sufficient.	stem	A SThing.1 and a SThing.2 cost a total of \$1Cost1. How much does the SThing.2 cost?	first statement	The SThing.1 costs SRelationship as much as the SThing.2.	

FIG. 103

	Family Overview   Model Workshop Generate Variants
Elle Edit Ylew Insert Format Iools Table Window Help ( 12)	Variables
	SThing(c, 2,4); String, in [apples4cranges,hat4coal Beave Model]
TCA Data Sufficiency Model	☑ ICost2(C): Int ☑ ITotalCost(C): Int, 40 to SVal by 1 ☑ SVal(C, 1,4): String, in [50,55,60]
reserved for variant	Shelationshipt[1,8]; String, in [half,twice,one qual   Import   Constraints
Statement (1)	Add Edit   Hemove Test Export Constraints
Statement (Z)	ost2
(a) Statement (1) ALONE is sufficient. (b) Statement (2) ALONE is sufficient. (c) Statements TOGETHER are sufficient. (d) EACH statement ALONE is sufficient. (e) Statements TOGETHER are NOT sufficient.	Constraints Comments
	Add Edit Remove Test
stem	
A SThing.1 and a SThing.2 cost a total of \$1Cost1. How much does the SThing.2 cost?	
first statement	
1. costs SRelationship as much as the SThing 2.	
Program: GRE Family: MICNEWDS\$R.DOC Attributes: DS Non	Non generic Near Active Model KY MICNEWDS\$R.doc

FIG. 104

# THE RESEARCH TO SEED OF STREET WHEN THE SECOND THOSE SECOND THOSE SECOND THE SECOND THOSE SECOND

### FILE: MICNEWDS\$R.doc

### **TCA Data Sufficiency Model**

### reserved for variant

Statement (1)

Statement (2)

- (a) Statement (1) ALONE is sufficient.
- (b) Statement (2) ALONE is sufficient.
- (c) Statements TOGETHER are sufficient.
- (d) EACH statement ALONE is sufficient.
- (e) Statements TOGETHER are NOT sufficient.

### stem

A SThing.1 and a SThing.2 cost a total of \$ICost1. How much does the SThing.2 cost?

### first statement

The SThing.1 costs SRelationship as much as the SThing.2.

### second statement

The SThing.1 costs \$ICost2.

### key

Key

### scratch pad

Scratch

Pad

Area

### Variables and constraints for model MICNEWDS\$R

```
Variables:
  Variable name: SThing
    Type: String
    Status: Enabled
    Checksum: Disabled
    Indexed: True
    Value Sets:
       Values:
          1. apples
          2. oranges
       Values:
          1. hat
          2. coat
  Variable name: ICost1
    Type: Integer
    Status: Enabled
    Checksum: Enabled
    Is independent = False
  Variable name: ICost2
    Type: Integer
    Status: Enabled
    Checksum: Enabled
     independent = False
  Variable name: ITotalCost
    Type: Integer
    Status: Enabled
    Checksum: Enabled
     ର୍ଛି independent = True, Range: from 40 to SVal by 1
  Variable name: SVal
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
       50
       55
       60
       65
  Variable name: SRelationship
    Type: String
    Status: Enabled
    Checksum: Enabled
    Indexed: False
    Values:
       half
       twice
```

### Variables and constraints for model MICNEWDS\$R

one quarter three times

Constraints:

Variation constraints:

Constraint: ITotalCost = ICost1 + ICost2

Status: Enabled

Constraint: ICost1 = ITotalCost - 20

Status: Enabled

T. N. T. N. T. Marie, H. D. Willer, Shire, Glass Marie Main Hall Him, D. D. Marie Ma

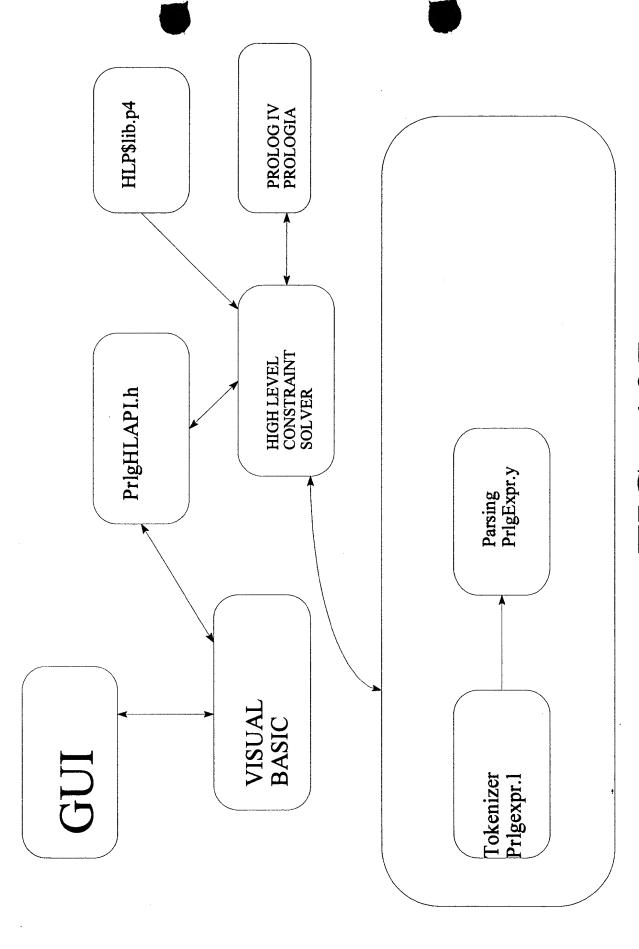


FIG. 107